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VOLUME 1—1926

1. Performance tests for children of pre-school age—R. STUTSMAN
2. An experimental study of the eidetic type—H. KLÜVER
- 3 & 4. A study of natio-racial mental differences—N. D. M. HIRSCH
5. A psychological study of juvenile delinquency by group methods—J. W. BRIDGES AND K. M. B. BRIDGES
6. The influence of puberty praecox upon mental growth—A. GISELL

VOLUME 2—1927

- 1 & 2. The mind of a gorilla—R. M. YERKES
3. The role of eye-muscles and mouth-muscles in the expression of the emotions—K. DUNLAP
4. Family similarities in mental-test abilities—R. R. WILLOUGHBY
5. Coordination in the locomotion of infants—L. H. BURNSIDE
6. The mind of a gorilla: Part II. Mental development—R. M. YERKES

VOLUME 3—January-June, 1928

1. An experimental study of the olfactory sensitivity of the white rat—J. R. LIGGETT
2. A photographic study of eye movements in reading formulae—M. A. TINKER
3. An experimental study of the East Kentucky mountaineers—N. D. M. HIRSCH
4. Responses of foetal guinea pigs prematurely delivered—G. T. AVERY
5. Objective differentiation between three groups in education (teachers, research workers, and administrators)—M. B. JENSEN
6. The effect of segregation on the sex behavior of the white rat as measured by the obstruction method—M. JENKINS

VOLUME 4—July-December, 1928

1. Observation and training of fundamental habits in young children—E. A. BOTT, W. E. BLATZ, N. CHANT, AND H. BOTT
- 2 & 3. Determination of a content of the course in literature of a suitable difficulty for junior and senior high school students—M. C. BURCH
- 4 & 5. Methods for diagnosis and treatment of cases of reading disability—M. MONROE
6. The relative effectiveness of lecture and individual reading as methods of college teaching—E. B. GREENE

VOLUME 5—January-June, 1929

1. The age factor in animal learning: I. Rats in the problem box and the maze—C. P. STONE
2. The effect of delayed incentive on the hunger drive in the white rat—E. L. HAMILTON
3. Which hand is the eye of the blind?—J. M. SMITH
4. The effect of attitude on free word association-time—A. C. EKDAHL
5. The localization of tactual space: A study of average and constant errors under different types of localization—L. E. COLE
6. The effects of gonadectomy, vasotomy, and injections of placental and orchic extracts on the sex behavior of the white rat—H. W. NISSEN

VOLUME 6—July-December, 1929

1. Learning and growth in identical infant twins: An experimental study by the method of co-twin control—A. GESELL AND H. THOMPSON
2. The age factor in animal learning: II. Rats on a multiple light discrimination box and a difficult maze—C. P. STONE
3. The acquisition and interference of motor habits in young children—E. MCGINNIS
4. A vocational and socio-educational survey of graduates and non-graduates of small high schools of New England—A. D. MUELLER
- 5 & 6. A study of the smiling and laughing of infants in the first year of life—R. W. WASHBURN

VOLUME 7—January-June, 1930

1. Tensions and emotional factors in reaction—E. DUFFY
2. Teacher influence on class achievement: A study of the relationship of estimated teaching ability to pupil achievement in reading and arithmetic—H. R. TAYLOR
- 3 & 4. A study of the effect of inverted retinal stimulation upon spatially coordinated behavior—P. H. EWERT
5. A study of the mental development of children with lesion in the central nervous system—E. E. LORD
6. An experimental study upon three hundred school children over a six-year period—N. D. M. HIRSCH

VOLUME 8—July-December, 1930

1. The amount and nature of activities of newborn infants under constant external stimulating conditions during the first ten days of life—O. C. IRWIN
2. Race and social differences in performance tests—S. D. PORTEUS, *et al.*
3. Language and growth: The relative efficacy of early and deferred vocabulary training, studied by the method of co-twin control—L. C. STRAYER
4. Eye-movements and optic nystagmus in early infancy—J. M. MCGINNIS
- 5 & 6. Reactions of kindergarten, first-, and second-grade children to constructive play materials—L. FARWELL

VOLUME 9—January-June, 1931

- 1 & 2. The status of the first-born with special reference to intelligence—H. H. HSIAO
- 3 & 4. An experimental study of bright, average, and dull children at the four-year mental level—H. P. DAVIDSON
5. An historical, critical, and experimental study of the Seashore-Kwalwasser test battery—P. R. FARNSWORTH
6. A comparison of difficulty and improvement in the learning of bright and dull children in reproducing a descriptive selection—F. T. WILSON

VOLUME 10—July-December, 1931

1. A comparative study of a group of southern white and negro infants—M. B. MCGRAW
- 2 & 3. An experimental study of prehension in infants by means of systematic cinema records—H. M. HALVERSON
4. The limits of learning ability in kittens—A. M. SHUEY
- 5 & 6. The effect of habit interference upon performance in maze learning—O. W. ALM

VOLUME 11—January-June, 1932

1. General factors in transfer of training in the white rat—T. A. JACKSON
2. The effect of color on visual apprehension and perception—M. A. TINKER
3. The reliability and validity of maze experiments with white rats—R. LEEPER
4. A critical study of two lists of best books for children—F. K. SHUTTLEWORTH
- 5 & 6. Measuring human energy cost in industry: A general guide to the literature—R. M. PAGE

VOLUME 12—July-December, 1932

1. Family resemblances in verbal and numerical abilities—H. D. CARTER
2. The development of fine prehension in infancy—B. M. CASTNER
- 3 & 4. The growth of adaptive behavior in infants: An experimental study at seven age levels—H. M. RICHARDSON
- 5 & 6. Differential reactions to taste and temperature stimuli in newborn infants—K. JENSEN

VOLUME 13—January-June, 1933

1. A critique of sublimation in males: A study of forty superior single men—W. S. TAYLOR
2. A study of the nature, measurement, and determination of hand preference—H. L. KOCH, *et al.*
3. The growth and decline of intelligence: A study of a homogeneous group between the ages of ten and sixty—H. E. JONES AND H. S. CONRAD
4. The relation between the complexity of the habit to be acquired and the form of the learning curve in young children—M. L. MATTSO
5. Eating habits in relation to personality development of two- and three-year-old children: A study of sixty-nine children in two nursery schools—A. A. ELIOT
6. Coordinating mechanisms of the spinal cord—O. C. INGBRITSEN

Genetic Psychology Monographs (continued)

VOLUME 14—July-December, 1933

1. Mental growth during the first three years: A developmental study of sixty-one children by repeated tests—N. BAYLEY
2. A study of triplets: including theories of their possible genetic relationships—F. N. ANDERSON AND N. V. SCHEIDEMANN
3. The objective measurement of emotional reactions—H. V. GASKILL
4. Development of behavior in the fetal cat—J. D. CORONIOS
5. A study of certain language developments of children in grades four to twelve, inclusive—L. L. LABRANT
6. The effect of early and delayed practice on memory and motor performances studied by the method of co-twin control—J. R. HILGARD

VOLUME 15—January-June, 1934

1. Studies in the psychology of tone and music—P. R. FARNSWORTH
2. Motor learning of children in equilibrium in relation to nutrition—E. L. BEER
3. Discrimination limits of pattern and size in the goldfish *Carassius auratus*—J. B. ROWLEY
4. Limits of learning ability in the white rat and the guinea pig—D. F. RIESS
- 5 & 6. The limits of learning ability in rhesus monkeys—H. A. FIELD

VOLUME 16—July-December, 1934

1. A statistical study of ratings on the California Behavior Inventory for Nursery-School Children—H. S. CONRAD
2. An eye-movement study of objective examination questions—A. FRANKLIN
3. An experimental study of constitutional types—O. KLINEBERG, S. E. ASCH, AND H. BLOCK
4. The development of a battery of objective group tests of manual laterality, with the results of their application to 1300 children—W. N. DUNST
- 5 & 6. An experimental study in the prenatal guinea-pig of the origin and development of reflexes and patterns of behavior in relation to the stimulation of specific receptor areas during the period of active fetal life—L. CARMICHAEL

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1. Organization of behavior in the albino rat—R. L. THORNDIKE
2. Brightness discrimination in the rhesus monkey—M. P. CRAWFORD
3. The limits of learning ability in cebus monkeys—A. M. KOCH
4. Nature-nurture and intelligence—A. M. LEAHY
5. On intelligence of epileptic children—E. B. SULLIVAN AND L. GAHAGAN
6. A study of the play of children of preschool age by an unobserved observer—D. L. COCKRELL

VOLUME 18—January-December, 1936

1. Sex differences in variational tendency—Q. MCNEMAR AND L. M. TERMAN
2. The process of learning to dress among nursery-school children—C. B. KEY, M. R. WHITE, M. P. HONZIK, A. B. HEINEY, AND D. ERWIN
3. A study of the present social status of a group of adults, who, when they were in elementary schools, were classified as mentally deficient—W. R. BALLER
4. The influence of specific experience upon mental organizations—A. ANASTASI
- 5 & 6. Studies in aggressiveness—L. BENDER, S. KEISER, AND P. SCHILLER

VOLUME 19—January-December, 1937

1. Psychological bases of self-mutilation—C. DABROWSKI
Masculine temperament and secondary sex characteristics: A study of the relationship between psychological and physical measures of masculinity—H. GILKINSON
2. A psychological study of forty unmarried mothers—R. D. NOTTINGHAM
3. Behavior problems in the children of psychotic and criminal parents—L. BENDER
4. Domination and integration in the social behavior of young children in an experimental play situation—H. H. ANDERSON
4. The sequential patterning of prone progression in the human infant—L. B. ANES

VOLUME 20—January-December, 1938

1. The relationship between characteristics of personality and physique in adolescents—P. S. DE Q. CABOT
2. Behavior problems of elementary school children: A descriptive and comparative study—I. Y. MASTEN
3. Graphic representation of a man by four-year-old children in nine prescribed drawing situations—P. F. GRIDLEY
3. Differences between two groups of adult criminals—R. S. TOLMAN
4. A comparative study by means of the Rorschach method of personality development in twenty pairs of identical twins—E. TROUP
- Individual differences in the facial expressive behavior of preschool children: A study by the time-sampling method—C. SWAN

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1. An experimental analysis of "level of aspiration"—R. GOULD
2. Some light on the problem of bilingualism as found from a study of the progress in mastery of English among pre-school children of non-American ancestry in Hawaii—M. E. SMITH
3. Domination and social integration in the behavior of kindergarten children and teachers—H. H. ANDERSON
- The capacity of the rhesus and cebus monkey and the gibbon to acquire differential response to complex visual stimuli—W. E. GALT
4. The social-sex development of children—E. H. CAMPBELL

VOLUME 22—January-December, 1940

1. Measuring human relations: An introduction to the study of the interaction of individuals—E. D. CHAPPELLE
2. Aggressive behavior in young children and children's attitudes toward aggression—M. D. FITE
3. Student attitudes toward religion—E. NELSON
- The prediction of the outcome-on-furlough of dementia praecox patients—J. S. JACOB
- Significant characteristics of preschool children as located in the Conrad inventory—K. H. READ
4. Learning by children at noon-meal in a nursery school: Ten "good" eaters and ten "poor" eaters—J. B. McCAY, E. B. WARING, AND P. J. KRUSE
- Studies in the interpretation of play: I. Clinical observation of play disruption in young children—E. H. ERIKSON

VOLUME 23—January-June, 1941

1. An analysis of certain variables in a developmental study of language—F. M. YOUNG
- Infant development under conditions of restricted practice and of minimum social stimulation—W. DENNIS
- An analysis of the mental factors of various age groups from nine to sixty—B. BALINSKY
2. Factors influencing performance on group and individual tests of intelligence: I. Rate of work—M. W. BENNETT
- Individual differences in apperceptive reaction: A study of the response of preschool children to pictures—E. W. AMEN

VOLUME 24—July-December, 1941

1. Twins T and C from infancy to adolescence: A biogenetic study of individual differences by the method of co-twin control—A. GESELL AND H. THOMPSON
- Finger nail-biting: Its incipency, incidence, and amelioration—A. L. BILLIE
- An experimental study of the factors of maturation and practice in the behavioral development of the embryo of the frog, *Rana pipiens*—A. FROMME
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- Stereotypes in the field of musical eminence—P. R. FARNSWORTH

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1. A study of factors determining family size in a selected professional group—J. C. FLANAGAN
- A genetic study of geometrical-optical illusions—A. WALTERS
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2. Are there any innate behavior tendencies?—J. B. SCHOELLAND
- An investigation of the intelligibility of the speech of the deaf—C. V. HUGGINS AND F. C. NUMBERS

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VOLUME 26—July-December, 1942

1. The critical frequency lumen for visual flicker in children between the ages of 6 and 18—V. L. MILLER
2. Some factors determining handedness in the white rat—K. L. WENTWORTH
3. Motivation and behavior—E. FRENKEL-BRUNSWIK

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1. Comparison of children's personality traits, attitudes, and intelligence with parental occupation—N. R. MADDY
2. A comparative study of mental functioning patterns of problem and non-problem children seven, eight, and nine years of age—M. L. PIGNATELLI

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1. Separation anxiety in young children: A study of hospital cases—H. EDELSTON
2. Correlates of vocational preferences—W. A. BRADLEY, JR.

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1. Mental changes after bilateral prefrontal lobotomy—S. D. PORTEUS AND R. D. KEPNER
2. A twin-controlled experiment on the learning of auxiliary languages—B. PRICE, W. J. KOSTIR, AND W. M. TAYLOR

VOLUME 30—July-December, 1944

1. A method of administering and evaluating the thematic appreciation test in group situations—R. M. CLARK
2. A study of anxiety reactions in young children by means of a projective technique—R. TEMPLE AND E. W. AMEN

VOLUME 31—January-June, 1945

1. The evolution of intelligent behavior in rhesus monkeys—B. WEINSTEIN
2. Perceptual behavior of brain-injured, mentally defective children: An experimental study by means of the Rorschach technique—H. WERNER

VOLUME 32—July-December, 1945

1. A clinical study of sentiments: I.—H. A. MURRAY AND C. D. MORGAN
2. A clinical study of sentiments: II.—H. A. MURRAY AND C. D. MORGAN

VOLUME 33—January-June, 1946

1. Interpretation of spontaneous drawings and paintings—T. S. WAELINER
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3. Outstanding traits: In a selected college group, with some reference to career interests and war records—F. L. WELLS AND W. L. WOODS

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1. The relation of emotional adjustment to intellectual function—J. L. DESPERT AND H. O. PIERCE
2. The smiling response. A contribution to the ontogenesis of social relations—R. A. SPITZ
3. Finger-painting and personality diagnosis—P. J. NAPOLI

VOLUME 35—January-June, 1947

1. The thematic apperception technique in the study of 'relationships'—W. E. HENRY
2. A continuation study of anxiety reactions in young children by means of a projective technique—M. DORKEY AND E. W. AMEN
3. A study of the vocational interest trends of secondary school and college women—A. M. CAWLEY

VOLUME 36—July-December, 1947

1. Maze test validation and psychosurgery—S. D. PORTEUS AND H. N. PETERS
2. The diagnostic implications of Rorschach's test in case studies of mental defectives—I. JOLLES

VOLUME 37—January-June, 1948

1. The radio day time serial: A symbolic analysis—W. L. WARNER AND W. E. HENRY
2. The relation of personality characteristics and response to verbal approval in a learning task—G. L. GRACE
3. The mechanism of vision: XVIII. Effects of destroying the visual "associative areas" of the monkey—K. S. LASHLEY
4. A study of the relationship between handwriting and personality variables—P. CASTELNUOVA-TEDESCO

VOLUME 38—July-December, 1948

1. Modern language learning: The intensive course as sponsored by the United States Army, and implications for the undergraduate course of study—M. LIN
2. Conflict: A study of some interactions between appetite and aversion in the white rat—M. A. TOLCOTT
3. Schizophrenia and the MAPS test: A study of certain formal psycho-social aspects of fantasy production in schizophrenia as revealed by performance on the Make a Picture Story (MAPS) Test—E. S. SHNEIDMAN
4. A study of the transmission of authority patterns in the family—H. L. INGERSOLL

VOLUME 39—January-June, 1949

1. A study of the psychoanalytic theory of psychosexual development—G. S. BLUM
2. The assessment of parental attitudes in relation to child adjustment—E. J. SHOBEN, JR.
3. Qualitative differences in the vocabulary responses of normals and abnormals—H. FEIGEL
4. The relative effectiveness of motion and still pictures as stimuli for eliciting fantasy stories about adolescent-parent relationships—P. E. EISERER
5. The organization of hereditary maze-brightness and maze-dullness—L. V. SEARLE

VOLUME 40—July-December, 1949

1. An experimental study of what young school children expect from their teachers—B. BIBER AND C. LEWIS
2. A study of the relative effects of age and of test difficulty upon factor patterns—H. A. CURTIS
3. A projective experiment using incomplete stories with multiple choice endings—J. K. SEATON
4. Effects of sex role and social status on the early adolescent personality—E. MILNER
5. Social perceptions and attitudes of children—M. RADKE, H. TRAGER, AND H. DAVIS

VOLUME 41—January-June, 1950

1. Some psychological and educational aspects of pediatric practice: A study of well-baby clinics—L. H. BLUM
2. One-trial learning in the domestic rat—B. B. HUDSON
3. An introduction to the principles of scientific psychoanalysis—A. ELLIS
4. Awareness of racial differences by preschool children in Hawaii—D. V. SPRINGER
5. Age trends in children's evaluation of teacher-approved and teacher-disapproved behavior—S. L. WITRYLO
6. The relationship between level of vocational aspiration and certain personal data: A study of some traits and influences bearing on the prestige level of vocational choice—J. STUBBINS

VOLUME 42—July-December, 1950

1. Personality patterns of suicidal mental hospital patients—N. L. FARBEROW
2. Sex-role identification in young children in two diverse social groups—M. RABBAN
3. A study of the influence of the social field on individual behavior: As revealed in the expression of hostility and warmth by neurotics and paranoid schizophrenics in discussion group situations—D. SHAPIRO
4. An experimental study of avoidance—R. F. HUFFERLINE

VOLUME 43—January-June, 1951

1. A study of copying ability in children—E. A. TOWNSEND
2. Prestige motivation of gifted children—D. P. AUSUBEL
3. A psychological study of physical scientists—A. ROE

VOLUME 44—July-December, 1951

1. The organization of hostility controls in various personality structures—S. FISHER AND E. HINDS
2. Children and radio: A study of listeners and non-listeners to various types of radio programs in terms of selected ability, attitude, and behavior measures—E. A. RICCIUTI
3. Quantitative expression in young children—W. E. MARTIN
4. The use of magnetic devices in the collection and analysis of the preverbal utterances of an infant—A. W. LYNIP

VOLUME 45—January-June, 1952

1. Japanese-American personality and acculturation—W. CAUBILL
2. A statistical study of the Freudian theory of levels of psychosexual development—C. A. BARNES
3. Personality characteristics of selected disability groups—D. N. WIENER

Genetic Psychology Monographs (continued)

VOLUME 46—July-December, 1952

1. The relationship of social status, intelligence, and sex of ten- and eleven-year-old children to an awareness of poverty—F. J. ESTYAN
An empirical study of the castration and Oedipus complexes—S. M. FRIEDMAN
2. The relationship between projective test scoring categories and activity preferences—M. M. SCHWARTZ
A comparison of formal and content factors in the diagnostic testing of schizophrenia—M. SHERMAN

VOLUME 47—January-June, 1953

1. Ability and accomplishment of persons earlier judged mentally deficient—D. C. CHARLES
Variations in the consistency of the behavioral meaning of personality test scores—M. KORNREICH
2. Some child-rearing antecedents of aggression and dependency in young children—R. R. SEARS, *et al.*
Symptom correlates for descriptive diagnosis—J. R. WITTENBORN, *et al.*

VOLUME 48—July-December, 1953

1. Age and mental abilities: A longitudinal study—W. A. OWENS, JR.
The development of a personality questionnaire for drinkers—P. J. HAMPTON
Personality and physical disease: A test of the Dunbar hypothesis applied to diabetes mellitus and rheumatic fever—D. H. CROWELL
2. Socio-economic contrasts in children's peer culture prestige values—B. POPE
A critical review of the stability of social acceptability scores obtained with the partial-rank-order and the paired-comparison scales—S. A. WITRYOL AND G. G. THOMPSON
A study of the effects of color on Rorschach responses—G. G. BRODY

VOLUME 49—January-June, 1954

1. Factors underlying major reading disabilities at the college level—J. A. HOLMES
Parent behavior toward first and second children—J. K. LASKO
2. Social-status and intelligence: An experimental study of certain cultural determinants of measured intelligence—E. A. HAGGARD
Certain determinants and correlates of authoritarianism—S. SIEGEL
Personalities in faces: I. An experiment in social perceiving—P. F. SECORD, W. F. DUKES, AND W. BEVAN

VOLUME 50—July-December, 1954

1. A study of the relationship between play patterns and anxiety in young children—E. W. AMEN AND N. RENISON
Operational exploration of the conceptual self system and of the interaction between frames of reference—M. EDELSON AND A. E. JONES
Problem solving: A statistical description of some relationships between organismic factors and selected response measures—N. A. FATTU, E. KAPOS, AND E. V. MECI
2. The relation of cortical potentials to perceptual functions—C. CHYATTE
The import for clinical psychology of the use of tests derived from theories about infantile sexuality and adult character—D. W. MILES
Measuring personality in developmental terms: The Personal Preference Scale—M. H. KROUT AND J. K. TABIN

VOLUME 51—January-June, 1955

1. Some relations between techniques of feeding and training during infancy and certain behavior in childhood—A. BERNSTEIN
The expression of personality in drawings and paintings—L. H. STEWART
2. Negative stereotypes concerning Americans among American-born children receiving various types of minority-group education—J. A. FISHMAN
The Lincoln-Oseretsky Motor Development Scale—W. SLOAN

VOLUME 52—July-December, 1955

1. Some personality correlates of sex, sibling position, and sex of sibling among five- and six-year-old children—H. L. KOCH
A quantitative Rorschach assessment of maladjustment and rigidity in acculturating Japanese Americans—C. DEVOS
Measurement of authoritarianism and its relation to teachers' classroom behavior—H. M. MCGEE
2. The formal aspects of schizophrenic verbal communication—B. MIRIN
A study in an aspect of concept formation, with subnormal, average, and superior adolescents—H. N. HOFFMAN
Traumatic avoidance learning: Acquisition and extinction in dogs deprived of normal peripheral autonomic function—L. C. WYNNE AND R. L. SOLOMON

VOLUME 53—January-June, 1956

1. As the psychiatric aide sees his work and problems—F. L. WELLS, M. GREENBLATT, AND R. W. HYDE
An investigation of avoidance, anxiety, and escape behavior in human subjects as measured by action potentials in muscle—J. D. BROTHERS
Spread of effect: A critical review—M. H. MARX
2. Stress, fantasy, and schizophrenia: A study of the adaptive processes—O. J. B. KERNER
The attitude structure of the individual: A Q-study of the educational attitudes of professors and laymen—F. N. KERLINGER

VOLUME 54—July-December 1956

1. A study of personality differences between middle and lower class adolescents: The Szondi Test in culture-personality research—L. RAINWATER
The assessment of parental identification—S. W. GRAY AND R. KLAUS
2. The influence of social context on impulse and control tendencies in preadolescents—G. H. ZUK
Tender-mindedness versus tough-mindedness in psychology: A reexamination—H. WINTHROP
A method for the comparison of groups: A study in thematic apperception—L. C. SCHAW AND W. E. HENRY

VOLUME 55—January-June, 1957

1. Academic performance and personality adjustments of highly intelligent college students—B. M. HORRALL
The use of the Vineland Social Maturity Scale in the planning of an educational program for non-institutionalized low-grade mentally deficient children—M. G. COTTSCEN
2. The structure and origin of the anal character—H. BELOFF
Free expression of adolescents' interests—M. AMATORA
The rôle of mass media and the effect of aggressive film content upon children's aggressive responses and identification choices—R. S. ALBERT
Interest in persons as an aspect of sex difference in the early years—E. W. GOODENOUGH

VOLUME 56—July-December, 1957

1. Some stable response determinants of perception, thinking, and learning: A study based on the analysis of a single test—M. L. SIMMEL AND S. COUNTS
Potentials of age: An exploratory field study—S. L. PRESSEY
2. Tactile communication—L. K. FRANK
The use of a filmed puppet show as a group projective technique for children—M. R. HAWORTH
The social competence of middle-aged people—R. J. HAVICHURST

VOLUME 57—January-June, 1958

1. Psychological and cultural problems in mental subnormality: A review of research—S. B. SARASON AND T. GLADWIN
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Muscular tension as a response to psychological stress in rheumatoid arthritis and peptic ulcer—J. A. SOUTHWORTH
Frustration: Theory and experiment—R. LAWSON AND M. H. MARX

VOLUME 58—July-December, 1958

1. Emotional aspects of political behavior: The woman voter—E. M. BENNETT AND H. M. GOODWIN
The accuracy of self estimate: A measure of self-concept reality—R. M. BRANDT
Personality factors in social mobility: A study of occupationally mobile businessmen—J. C. ABEGLLEN
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Some factors related to the choice-status of ninety eighth-grade children in a school society—D. ELKINS

Genetic Psychology Monographs (continued)

VOLUME 59—January-June, 1959

1. Freshman Rorschachs and college performance—G R SCHMEIDLER, M J NELSON, AND M BRISTOL
Perceptual aspects of attributed movement—R W COAN
Men and women Personality patterns and contrasts—E M BENNETT AND L R COHEN
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Separatism and integrationism: A social psychological analysis of editorial content in New York newspapers of three American minority groups—J A FISHMAN AND G S FISHMAN
Self, role, and satisfaction—A L BROPHY

VOLUME 60—July-December, 1959

1. The constancy of personality ratings over two decades—R D TUDDENHAM
Mother-son identification and vocational interest—L H STEWART
A study of mother-child relationships in the emotional disorders of children—M J ROSENTHAL, M FINAELSTEIN, E NI, AND R E ROBERTSON
On the trail of the wolf-children—W F OGBURN AND N K BOSE
2. Measuring the mental health of normal adults—R F PECK
Parental identification in young children—W EMMERICH
The problems of Jewish religious youth—B M LEVINSON

VOLUME 61—January-June, 1960

1. Identifying socially maladjusted school children—A A ADAMS
Social interaction in an interracial nursery school—H W STEVENSON AND N G STEVENSON, *et al*
Interests of preadolescent boys and girls—M AMATORA
Educational and sex differences in the organization of abilities in technical and academic students in Colombia, South America—J F FILELLA
2. Some themes in the personalities of German men—L RAINWATER
Right-left gradients in body image, body reactivity, and perception—S FISHER
Longitudinal survey of child Rorschach responses: Younger subjects two to 10 years—L B AMES
Personality patterns related to occupational roles—M SIEGELMAN AND R F PECK

VOLUME 62—July-December, 1960

1. The reading process: A descriptive, interdisciplinary approach—M P LANGMAN
Reactions to stress as a function of the level of intelligence—S M H ZAIDI
Rorschach diagnosis by a systematic combining of content, thought process, and determinant scales—P A BOWIR, R TESTIN, AND A ROBERTS
Longitudinal survey of child Rorschach responses: Older subjects aged 10 to 16 years—L B AMES
2. Twenty years of shock therapy in America, 1937-1956: An annotated bibliography—N H PROKNO, R SITTERLY, AND K BERG
The quantitative analysis of parent behavior toward psychotic children and their siblings—E M DONNELLY

VOLUME 63—January-June, 1961

1. Make a sentence test: An approach to objective scoring of sentence completions—E F BORCATT
Some aspects of the relationship between perception and motility in children—E P ROTHMAN
Some psychophysical aspects of mental illness in children—P H BERKOWITZ
Conceptual thinking in schizophrenic children—G FRIEDMAN
2. Some maternal influences on children's personality and character—J C FINNEY
A study of concept formation in normals, mental defectives, and brain damaged adults—R W ZASLOW
An investigation of trait relationships among six year-old children—S A AYAKIAN

VOLUME 64—July-December, 1961

1. Coping with school children in response to intelligence test demands—A MOPARTY
Studies of individual and paired interactional problem solving behavior of rats: I Solitary and social controls—A BARON AND R A LITTMAN
2. Studies of role performance—J H MANN
A psychological assessment of professional actors and related professions—R TAFT
A cross cultural study of menstrual taboos—W N STEPHENS
The biological roots of creativity—H GUTMAN

VOLUME 65—January-June, 1962

1. A Rorschach study of the development of personality structure in white and Negro children in a Southeastern community—A C PRICE
Measuring personality patterns of women—J LOEVINGER
Home interests in early adolescence—M AMATORA
Social and emotional adjustment during adolescence as related to the development of psychosomatic illness in adulthood—L H STEWART
2. A systematic study of interaction process scores, peer and self-assessments, personality and other variables—E F BORCATT
Children's conceptions of the content and functions of the human body—E CELLERT

VOLUME 66—July-December, 1962

1. Ocular manual laterality and perceptual rotation of literal symbols—I FLESCHER
Parental child rearing attitudes and their correlates in adolescent hostility—S B CHOROST
Some explorations into the nature of anxieties relating to illness—P R ROBBINS
Developmental interactive aspects of hypnosis: Some illustrative cases—J R HILGARD AND E R HILGARD
2. Teaching a two-year-old to read: An experiment in early childhood learning—W FOWLER
Achievement gains or losses during the academic year and over the summer vacation period: A study of trends in achievement by sex and grade level among students of average intelligence—K M PARSLEY, JR., AND M POWELL

VOLUME 67—January-June, 1963

1. Verbatim dialogue of a mother and child in therapy—C E MOUSTAKAS
A study of self-concept: Delinquent boys' accuracy in selected self evaluations—W E AMOS
An integrating study of the factor structure of adult attitude interests—R B CATTELL AND J HORN
Social factors in mental disorders: A contribution to the etiology of mental illness—W C COBLINER
2. Conceptual preferences associated with choice of quantitative and nonquantitative college majors—J GILBERT
A study of the concept of the feminine role of 51 middle-class American families—A STEINMANN

VOLUME 68—July-December, 1963

1. Brain dynamism as reflected in illusions—G. K. YACORZYNSKI
The nature and measurement of components of motivation—R B CATTELL, J A RADCLIFFE, AND A B SWENY
2. Sharing in preschool children as a function of amount and type of reinforcement—W F FISCHER
The Gesell Incomplete Man Test as a measure of developmental status—L B AMES AND F L ILC
Psychological and sociological factors in prediction of career patterns of women—M C MULVEY
Institutionalism and its historical significance—R HARRISON

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(Manuscripts are printed in the order of final acceptance)

- Identification with Mexican family values and authoritarianism in Mexican-Americans 3
By MANUEL RAMIREZ III
- A cross-cultural comparison of the factor structure of selected tests of divergent thinking 13
By GEORGE F. MADAUS
- Cross-cultural and intracultural attitudes of Lapp and Norwegian children 23
By FRED GUGGENHEIM AND ANTON HOEM
- Maze performance and personal, social, and economic adjustment of Alaskan natives 37
By JOSEPH KUNCE, L. S. RANKIN, AND ELAINE CLEMENT
- Sex and age as variables in persuasibility 47
By JAMES O. WHITTAKER AND ROBERT D. MEADE

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A cross-cultural investigation of occupational stereotypes in three South African groups	53
BY HELMUT MORSBACH AND GISELA MORSBACH	
Cross-cultural action research: Some limitations, advantages, and problems .	61
BY NORMAN B. HENDERSON	
Birth order of volunteers for sensory restriction research	71
BY DUANE P. SCHULTZ	
Some effects of relevant stories portraying danger on retention of information associated with the stories	75
BY EDWARD H. FISCHER, STANLEY L. COHEN, LAWRENCE E. SCHLESINGER, AND RICHARD H. BLOOMER	
Religious differences in cognitive associations and self-concept in prospective teachers	89
BY HERBERT J. WALBERG	
Familiarity, salience, and the order of presentation of communications . .	97
BY RALPH L. ROSNOW AND J. H. GOLDSTEIN	
Components of social distance among college students and their parents in Hawaii	111
BY NEIL SHIM AND ARTHUR A. DOLE	
Continuities and discontinuities in attitudes of the same persons measured through time	125
BY W. C. CAPEL	
Smoking and MMPI scores among entering freshmen	137
BY ROBERT R. EVANS, EDGAR F. BORGATTA, AND GEORGE W. BOHRENSTEDT	
BOOKS RECENTLY RECEIVED	141

IDENTIFICATION WITH MEXICAN FAMILY VALUES AND AUTHORITARIANISM IN MEXICAN-AMERICANS*¹

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A. INTRODUCTION

The characteristics of the Mexican family structure that have been described by Lewis (7), Gillin (5), and Diaz-Guerrero (3) resemble those of the families of high authoritarians reported by Adorno *et al.* (1). Both the Mexican and high authoritarian families are typically father dominated and employ strict child-rearing methods emphasizing submission and strong obedience to the will and dictates of authority figures. In both groups interrelationships are based on roles of dominance and submission and both believe in strict separation of the sex roles. In addition to these similarities, the type of family organization that Lewis (8) has found to be the most prevalent in Mexico, the monolithic type, is similar to the structure of the authoritarian family.

Madsen's (9) studies of the Mexican-American in Texas have revealed that the organization of the Mexican-American family possesses many characteristics in common with the Mexican family. The Mexican-American family has retained the features of father dominance, masculine superiority, strict disciplining of children, separation of the sex roles, and emphasis on submission and obedience to authority figures, which also characterize the Mexican family. The family ideology of Mexican-Americans should, thus, be similar to that of Mexicans and high authoritarians.

In this study it was hypothesized that Mexican-American college students would score higher than Anglo-Americans on a family attitude scale that reflected the values of the Mexican family. It was also predicted that the Mexican-Americans would score higher on the F Scale because their family milieu is very much like that of the high authoritarians and also because Levin-

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¹ The research was completed while the author was a student at the University of Texas. The author would like to thank Professor Donn Byrne of the University of Texas for his help on this paper.

son and Huffman (6) had shown that there is a positive relationship between an autocratic family ideology and high scores on the F Scale.

B. METHOD

1. *Subjects*

The Ss were 70 Mexican-Americans (third generation) and 70 Anglo-Americans (not belonging to any identifiable cultural or racial minority group), ranging in age from 18 to 24. All the Ss were middle-class, Catholic, college students. There were equal numbers of males and females within each of the cultural groups.

2. *Authoritarianism*

The California F Scale was administered to all the Ss. The scale used was one developed by Byrne and Bounds (2). It consisted of 32 items and agreement with each item could be expressed on a seven-point scale.

3. *Family Attitudes*

A family attitude scale was administered to the Ss concurrently with the F Scale. The scale consisted of 28 items to which the Ss responded on an agree-disagree basis as with the F Scale. The items on this scale were selected to represent the Mexican family values that had been reported by Gillin (5), Lewis (7, 8), and Diaz-Guerrero (3). Some of the items used were selected from among those employed by Diaz-Guerrero (3) in a previous study. Others were taken from the Traditional Family Ideology Scale (6) and the Parent Attitude Research Instrument (10). The remainder of the items were designed by the author.

C. RESULTS

The results reported on Tables 1 and 2 indicate that the Mexican-American Ss made significantly higher scores than the Anglo-Americans on both the F and Mexican Family Attitude Scales. In addition, the data of the Mexican-Americans showed a significant positive relationship ($r = .624 < .005$) between the scores on the Mexican Family Attitude Scale and those of the F Scale. The Mexican-American females made higher scores on both scales than did any of the other three culture-sex subgroups.

Items 5, 13, 18, and 32 succeeded best in differentiating between the Mexican-Americans and Anglo-Americans on the F Scale. On the attitude scale Items 6, 9, 13, 15, 18, 19, and 20 had the greatest discriminatory power

TABLE 1
COMPARISON OF MEXICAN FAMILY ATTITUDE SCALE SCORES OF
MEXICAN-AMERICANS AND ANGLO-AMERICANS

Sex	Mexican-American		Anglo-American		Difference	<i>t</i>	F
	Mean	SD	Mean	SD			
M&F	86.15	17.24	73.48	11.1	12.67	5.13*	2.33*
M	82.64	18.72	75.44	6.88	7.20	3.00 [†]	7.19*
F	89.66	16.54	71.52	4.32	18.14	8.68 [‡]	14.66*

* $p < .005$

TABLE 2
COMPARISON OF F SCALE SCORES OF THE MEXICAN-AMERICANS AND ANGLO-AMERICANS

Sex	Mexican-American		Anglo-American		Difference	<i>t</i>	F
	Mean	SD	Mean	SD			
M&F	132.17	24.24	113.25	5.05	18.92	6.35*	23.04*
M	131.20	17.79	114.00	4.91	17.20	7.75*	13.13*
F	133.04	29.42	113.40	5.33	20.14	4.94*	30.45*

* $p < .005$.

TABLE 3
MEANS AND DISCRIMINATORY POWERS (D.P.) OF ITEMS ON THE MEXICAN FAMILY
ATTITUDE SCALE WHICH DISCRIMINATED BEST BETWEEN THE
MEXICAN-AMERICANS AND ANGLO-AMERICANS

Item No	Item	Means		D P
		M-A	A-A	
6.	For a child the mother should be the dearest person in existence.	5.5	3.0	2.5
9.	More parents should teach their children to have unquestioning loyalty to them	5.2	3.2	2.0
13.	Some equality in marriage is a good thing, but by and large the husband ought to have the main say-so in family matters.	5.8	4.2	1.6
15.	It helps a child in the long run if he is made to conform to his parents' ideas.	5.4	3.0	2.4
18.	The word of an adult should never be questioned.	5.2	3.7	1.5
19.	It doesn't do any good to try to change the future, because the future is in the hands of God.	5.7	3.9	1.8
20.	The stricter the parents, the better the child	6.8	3.5	3.3

(D.P.). These items together with the group means and D.P.s are listed on Tables 3 and 4.

Table 5 shows the per cent of yes or agree responses of the Mexican-American, Anglo-American, Mexican, and Puerto-Rican samples to items

reflecting some of the Mexican family values. Since the data of the Mexicans and Puerto-Ricans were reported in percentages, it was necessary to transform the data obtained in this study into percentages as well. This was done by computing the percentages of Mexican-American and Anglo-American Ss who responded to each of these items on the agree side of the agree-disagree dimension in the answer sheet (i.e., scale points 5 to 7).

TABLE 4
MEANS AND DISCRIMINATORY POWERS (D.P.) OF ITEMS ON THE F SCALE
WHICH DISCRIMINATED BEST BETWEEN MEXICAN-
AMERICANS AND ANGLO-AMERICANS

Item No.	Item	Means		D.P.
		M-A	A-A	
5.	There is hardly anything lower than a person who does not feel a great love, gratitude, and respect for his parents.	5.8	3.4	2 4
13.	Young people get rebellious ideas, but as they grow up they ought to get over them and settle down.	5.6	3 5	2 1
18.	No weakness or difficulty can hold us back if we have enough will power.	5.5	4 4	1 1
32.	Obedience and respect for authority are the most important virtues children should learn.	6.0	3 8	2 2

D. DISCUSSION

The results of the Mexican Family Attitude Scale show that the Mexican-Americans indicated greater agreement with Mexican family values than did the Anglo-Americans; thus, the observations made by Madsen (9) are supported. In addition, F Scale scores indicate that the Mexican-Americans also expressed more agreement with an authoritarian ideology than did the Anglo-Americans. The significant positive relationship between Family Attitude Scale scores and F Scale scores in the data of the Mexican-American group is consistent with the observations of Adorno *et al.* (1) and with the results of the Levinson and Huffman (6) study. It is evident, therefore, that the positive relationship between autocratic family ideology and authoritarianism which Levinson and Huffman (6) had found among high authoritarian Anglo-Americans is also evident in a cultural minority group.

Comparison of the responses given by the Mexican-Americans to the Mexican Family Attitude Scale with those of the Mexicans in the Diaz-Guerrero (3) study shows that there are some differences in the attitudinal patterns of the two groups. While most Mexican-Americans were in agree-

TABLE 5
PER CENT OF AGREE AND YES RESPONSES OF MEXICAN-AMERICANS, ANGLO-AMERICANS, MEXICANS,^a AND PUERTO RICANS^b
TO SOME MEXICAN FAMILY ATTITUDE SCALE ITEMS

Item	Mexican-Americans		Anglo-Americans		Mexicans		Puerto Ricans	
	M % (Agree)	F % (Agree)	M % (Agree)	F % (Agree)	M % (Yes)	F % (Yes)	M % (Yes)	F % (Yes)
Mother is dearest person in existence	73	70	35	42	95	86	84	89
The place for the woman is in the home	23	19	22	16	91	90	81	77
Men are more intelligent than women	14	7	10	5	44	23	64	16
The stricter the parents, the better the child.	87	89	14	12	41	44	12	6
Men should wear the pants in the family.	72	68	55	47	85	78	81	65

^a The results for the Mexican sample were taken from Diaz-Guerrero (3, p. 416, Table 2)

^b The results for the Puerto Rican sample were taken from Fernandez-Marina *et al.* (4, pp. 172-177, Tables 1 and 2).

ment with Mexican family ideology in general, they rejected the values of masculine superiority and separation of the sex roles. The pattern of family attitudes in the Mexican-Americans in this study, therefore, resembles that of the Puerto Ricans more than it does that of the Mexicans. Fernandez-Marina (4), in a study of family attitudes among Puerto Rican college students, found that, while they too were in agreement with most Mexican family values, there was evidence of Americanization in the form of a lessening of the father's traditional authority in the family and of the authority of the male in the culture in general. The results of this study show that the Mexican-American value system has been similarly affected by American middle-class influence. It is interesting to note, however, that the Mexican-American women in this study obtained the highest scores on both the F and the Mexican Family Attitude Scales. Thus, it appears that, although the Mexican-American female is achieving increasingly more freedom and equality, she still shows signs of strong adherence to conformity and submission to authority. This is further evidenced by the Mexican-American female subjects' strong agreement on items dealing with strictness of child rearing, father dominance in the family, and faith in a supernatural power. Since the Mexican-American family beliefs are following a trend toward Americanization much like those of the Puerto Ricans, it is likely that the conflicts Fernandez-Marina (4) hypothesized were being experienced by young Puerto Ricans as a result of the change are also being experienced by Mexican-Americans. These conflicts are (a) rather confused, resentful attitudes toward authority; (b) strong competitive strivings among females to achieve increased authority in the family; and (c) difficulties in adjustment to poorly defined social roles. The author is already conducting a pilot study to determine if in fact some of these conflicts are being experienced by Mexican-American adolescents.

The large values of the standard deviations in the data of the Mexican-Americans indicate that the Ss in the group were in various stages of acculturation. Some had almost completely rejected the Mexican family values, while others were still very much identified with them. It would appear, then, that there are other variables besides generation membership and socioeconomic class that are related to level of acculturation in Mexican-Americans. Perhaps future research in this area should take into account the environment in which the Ss were reared. For example, it would be expected that Mexican-Americans reared in South Texas, as compared to those reared in other areas, would be more closely identified with the Mexican family values because of their proximity to Mexico and also because they are surrounded by people of Mexican descent who undoubtedly reinforce them for being "Mexican." On the

other hand, those Mexican-American Ss who were reared in other areas of Texas that are a considerable distance from the Mexican border and where few members of the population are of Mexican descent were probably reinforced far less for being "Mexican" and perhaps even discriminated against if they demonstrated identity with the Mexican family values. The variability in scores was more evident in the data of the Mexican-American women than the men. This is to be expected because their roles are being affected more than are those of men by the increasing Americanization in the values of the culture. While some of them are being encouraged to become increasingly independent and assertive, others, and particularly those who live in areas of the state in which there are large concentrations of people of Mexican descent, are being urged to ignore the changes taking place and to adhere to the demands of their ethnic group.

The results obtained here indicate that young middle-class Mexican-Americans may be experiencing some cognitive dissonance in the area of civil rights. As members of a minority group it is expected that they would be interested in achieving equality of opportunity for the members of their cultural group by effecting changes in the *status quo*. The findings of this study, however, indicate that Mexican-Americans adhere to standards of conformity and authoritarian submission, thus indicating a need to maintain the *status quo* and certainly to refrain from opposing it. These two attitudes are incongruous; and, if they are indeed held by the Mexican-American, he is likely to be in cognitive dissonance. A study is being planned to investigate this further.

Although this study employed quantitative techniques which are usually associated with the research of psychologists, it confirmed the findings of anthropologists, who had utilized different research methods. Using both psychological and anthropological research techniques in cross-cultural personality research is advantageous. When both techniques are used together their strengths can be pooled for increased effectiveness, and weaknesses inherent in each can be partially eliminated. For example, with the quantitative techniques used here a much larger sample can be studied, the results can be analyzed statistically, and they can be more readily compared to those of other researchers; but this is usually accomplished at the expense of less intensive study of individual subjects. The techniques of observation of behavior and interviewing usually provide more thorough studies of individual Ss and their environments, but the samples studied are usually smaller, thus raising the question of representativeness. If both techniques are utilized to study the same population, however, the strengths of each can be enhanced, their weaknesses

partially eliminated, and the data of one can be checked against that of the other.

E. SUMMARY

The purpose of this study was to assess the extent to which Mexican-Americans are identified with Mexican family values and also to determine whether there is a positive relationship between autocratic family ideology and authoritarian ideology in Mexican-Americans. The Ss were 140 middle-class, Catholic, college students, half of which were Mexican-American and half Anglo-American. A Mexican Family Attitude Scale and an F Scale were administered concurrently to all the Ss. The results showed that the Mexican-Americans made higher scores on both scales than did the Anglo-Americans. In addition, there was a significant positive relationship between high agreement with the items of the attitude scale and high scores on the F Scale in the data of the Mexican-Americans. The results confirmed the observations of Adorno *et al.* and also the results of the Levinson and Huffman study. Comparison of the family attitude pattern of the Mexican-Americans with that of Mexicans and Puerto Ricans revealed that the Mexican-American value system showed signs of Americanization in form of a decrease in the authority of the male. The Mexican family values on which the Mexican-Americans expressed more agreement than disagreement were those of conformity, strict child rearing, and authoritarian submission. It was hypothesized, therefore, that Mexican-Americans may be experiencing conflicts as a result of acculturation stress and cognitive dissonance in the area of civil rights.

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A CROSS-CULTURAL COMPARISON OF THE FACTOR STRUCTURE OF SELECTED TESTS OF DIVERGENT THINKING*¹

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A. INTRODUCTION

Systematic study in creativity is a relatively new field of educational and psychological research; and in much of the literature, especially in studies of youth, where meaningful criteria of creative achievement are often lacking, the terms creativity and divergent thinking have come to be used synonymously. Since divergent thinking has been operationalized by a score or scores on paper and pencil tests, it becomes important ultimately to establish the predictive validity of these tests against later creative achievement. At present, the validity of the construct can be investigated by exploring the relationships between the tests themselves, and between the tests and other psychological measures, and also by examining differences in performance of diverse samples on divergent thinking tests.

B. THE PROBLEM

This study sought to explore the stability of the construct of divergent thinking (as measured by selected tests) across two widely differing cultures. The effects of cultural influences on divergent thinking tests is an intriguing question that has received scattered attention in the literature (4, 5, 9, 10). Torrance (9) found that the developmental originality curves over grades one through six of four countries and of segregated Negroes in the United States were different from each other and from the general United States curve. He suggests that these data confirm his hypothesis that indications of decline in creative thinking, as measured by divergent thinking tests, are the results of cultural discontinuities that are associated with personality disorganization and concomitant discontinuities in mental functioning. Iscoe and Pierce-Jones (4), working with samples of lower-class southern whites and

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Negroes, found evidence that differences in fluency and originality scores were a function of the cultural relevancy of the stimuli used in testing (3).

Both these studies demonstrate that differences in mean scores can be expected across cultures or subcultures when identical tests are used, but leave unanswered the question of whether or not the same kinds of relationships between the tests can be expected across cultures. This investigation, part of a larger study of the affective correlates of divergent thinking, sought to determine whether or not cultural differences also result in different factor structures on selected tests of divergent thinking, and sought, thereby, to shed some light on construct validity of these tests.

C. PROCEDURES

1. *Sample*

Three distinct samples were used in this study. The first consisted of 609 high school students, the complete freshman and sophomore classes, excluding the educable mentally retarded, of a suburban, south side Chicago, Illinois, high school. There were 285 girls and 324 boys. The school serves predominantly lower middle-class to middle-class families, with a large preponderance of blue collar workers.

The second sample consisted of 203 public grammar school students from suburban Dublin, Ireland.² There were 101 boys from a boys' school staffed by a religious order of men, and 102 girls from a girls' school staffed by a religious order of women. Both schools were privately owned and run, as are all public grammar schools in Ireland. However, the schools must follow rather strict state curricula and are financed mainly through governmental funds, with a small tuition fee of 10 to 15 pounds per year. The students were in their second year, the equivalent to the sophomore year of high school in the United States. Both Irish schools are considered neighborhood schools serving middle-class, white collar families with a sprinkling of families of skilled workers. Entrance is by examination. Because only 35 to 40 per cent of the Irish school-age population goes on to a grammar school education, the Irish sample is probably much more homogeneous in ability than the American sample, but covers the full range of ability found in Irish secondary schools.

The third sample consisted of 65 teachers from the same Illinois high school used in the first sample. This sample was tested to see whether age,

² I wish to extend my thanks to Rev. John Macnamara, Ph.D., and Dr. Thomas P. Kellaghan of the Educational Research Centre, St. Patrick's College, Dublin, for their cooperation in securing and testing the Irish sample.

education, and maturity resulted in a factor pattern different from those of the adolescent samples.

2. Instruments

The following four subtests of the *Minnesota Tests of Creative Thinking* were administered to the three different samples during February, 1966: (a) *Verbal*—Product Improvement: The subject was asked to list changes in a toy that would result in children having more fun playing with it, and Unusual Uses: The subject was asked to list unusual uses for a toy other than as a plaything; and (b) *Nonverbal*—Figure Completion: The subject was asked to add lines to an incomplete figure to make an object or design, and Circles: The subject was asked to make objects from 30 circles.

The toy used as a stimulus on the verbal tests was a dog for both American samples and an elephant for the Irish sample. The difference was due to an error in mailing materials to be duplicated in Ireland.

3. Scoring

Through use of the procedures outlined by Yamamoto (11), four scores for each of the four subtests and four total scores for each of the verbal and nonverbal batteries were derived. The four scores in each case were entitled Fluency, Flexibility, Originality, and Elaboration.

The weights developed by Yamamoto (11) for the Originality score were used for the two adolescent samples. A check showed that, while the percentages of frequency of occurrence were not at the suggested levels, the categories were in the same relative rank order as in the manual for both samples. This was not true for the adult sample, and, therefore, different weights were computed by using the suggested criteria.

Before scoring was done, the names were removed from each test and assigned a code number. The four separate tests were then scored by four separate groups of scorers, each group consisting of four individuals. When all the tests were scored, they were reassembled and the eight total scores were computed. A check on interscorer agreement was made by having each of the four persons in a group score 50 randomly selected tests. The mean interscorer agreement coefficients varied between .87 and .99, with only two below .90.

D. RESULTS

The means and standard deviations for each of the three samples are contained in Table 1. Since the principal focus of the study was on similarities

and differences between the two adolescent samples, *t* tests were computed only between the means for these two groups.

The mean scores across cultures differ significantly on six of the eight scales, the American adolescents scoring higher than the Irish students in each case.

Since differences were shown to exist between the cultures on divergent thinking scores, factor structures were examined to see whether they also would differ across cultures. The stability of the factor structure of the divergent thinking tests across the two cultures can be examined from the table of intercorrelations and from the results of a principal-components factor analysis. Table 2 presents the table of intercorrelations between the

TABLE 1
MEANS AND STANDARD DEVIATIONS FOR THREE SAMPLES ON SELECTED SCORES
OF THE MINNESOTA TESTS OF CREATIVE THINKING

Test	Irish (<i>N</i> = 203)		American (<i>N</i> = 609)		American teacher (<i>N</i> = 65)	
	\bar{X}	<i>SD</i>	\bar{X}	<i>SD</i>	\bar{X}	<i>SD</i>
1. Nonverbal Fluency	21.58	7.98	24.59**	9.47	33.68	9.41
2. Nonverbal Flexibility	11.84	3.86	11.80	4.68	13.34	6.51
3. Nonverbal Originality	52.04	19.11	55.89*	19.79	45.12	15.02
4. Nonverbal Elaboration	28.16	9.10	28.68	10.55	28.71	10.60
5. Verbal Fluency	18.01	7.30	19.99**	8.23	32.35	10.13
6. Verbal Flexibility	8.45	3.72	10.42**	4.58	15.22	5.62
7. Verbal Originality	28.81	12.43	33.59**	14.64	43.42	14.40
8. Verbal Elaboration	20.46	8.11	22.30*	8.89	41.19	12.86

* *t* between Irish and American sample significant at $p < .05$.

** *t* between Irish and American sample significant at $p < .01$.

eight divergent thinking scores, with the Irish sample appearing above the diagonal, the American sample below. Table 3 presents the table of intercorrelations among the divergent thinking scores for the sample of American teachers.

Table 2 shows a very similar pattern of intercorrelations for both the Irish and American samples. The nonverbal tests are highly intercorrelated; the mean intercorrelations, with the use of Fisher's *z* transformation, are .72 and .70 for the Irish and American samples respectively. The verbal scores are also highly intercorrelated, the means being .80 for the Irish sample and .86 for the American. The intercorrelations between the verbal and nonverbal scores are low to moderate in both cases. The mean intercorrelation for the Irish sample is .38, for the American sample it is .33. Thus, the task specific measures are highly interrelated for both samples. On the other hand, the

TABLE 2
INTERCORRELATIONS BETWEEN SELECTED SUBSCORES OF THE MINNESOTA TESTS OF CREATIVE THINKING: IRISH SAMPLE ABOVE THE DIAGONAL, AMERICAN SAMPLE BELOW*

Test	1	2	3	4	5	6	7	8
1. Nonverbal Fluency	—	.62	.70	.70	.43	.23	.43	.42
2. Nonverbal Flexibility	.46	—	.67	.74	.33	.17	.29	.33
3. Nonverbal Originality	.60	.77	—	.82	.44	.31	.37	.44
4. Nonverbal Elaboration	.49	.75	.87	—	.53	.35	.46	.53
5. Verbal Fluency	.29	.34	.36	.41	—	.69	.91	.93
6. Verbal Flexibility	.24	.29	.30	.34	.79	—	.56	.63
7. Verbal Originality	.28	.33	.35	.39	.93	.73	—	.85
8. Verbal Elaboration	.25	.32	.33	.39	.94	.74	.91	—

* An r of .14 is significant at the .05 level of confidence for the Irish sample. An r of .09 is significant at the .05 level of confidence for the American sample.

measures with the same factor name (e.g., Fluency) have low correlations across the verbal and nonverbal tasks in both cases.

Table 3 shows that the pattern for the American teachers is similar to the pattern found for the two adolescent samples, the one exception being the low relationships between the nonverbal fluency scores and the remaining nonverbal scores.

When the correlation matrices were subjected to a principal-components analysis, with unity inserted in the diagonals, similar patterns emerged for all three samples. In each case, only two of the eight latent roots were greater than one and were retained for further analysis. The two components accounted for 80.9 per cent of the total variance in the battery of eight tests for the Irish sample, 81.6 per cent for the American sample, and 72.8 for the sample of teachers. The results of the principal-components factor analysis and the rotation using the varimax criterion are found in Table 4.

From Table 4 we see that the first principal component, for both Irish and

TABLE 3
INTERCORRELATIONS BETWEEN SELECTED SUBSCORES OF THE MINNESOTA TESTS OF CREATIVE THINKING FOR 65 ILLINOIS HIGH SCHOOL TEACHERS*

Test	1	2	3	4	5	6	7
1. Nonverbal Fluency	—						
2. Nonverbal Flexibility	.25	—					
3. Nonverbal Originality	.16	.60	—				
4. Nonverbal Elaboration	.16	.59	.86	—			
5. Verbal Fluency	.25	.28	.41	.35	—		
6. Verbal Flexibility	.09	.35	.32	.28	.66	—	
7. Verbal Originality	.28	.25	.36	.25	.88	.67	—
8. Verbal Elaboration	.35	.26	.40	.39	.89	.67	.87

* An r of .23 is significant at the .05 level of confidence

American samples, had values high in all measures. The second was bipolar, a contrast between the verbal scores at one end, nonverbal at the other. When these two components are rotated, the resulting factors are easily interpreted as being figural and semantic. Separate factors for fluency, flexibility, originality, and elaboration failed to materialize. These factor structures resemble those found by Schmadel *et al.* (7), who used similar Minnesota tests with sixth graders.

TABLE 4
TWO PRINCIPAL COMPONENTS AND ROTATED VARIMAX FACTORS FOR EIGHT SELECTED
SUBSCORES OF THE MINNESOTA TESTS OF CREATIVE THINKING

Test	Irish ($N = 203$)			
	Unrotated		Rotated	
	I	II	I	II
N-Verbal Fluency	.729	.436	.805	.316
N-Verbal Flexibility	.660	.573	.869	.092
N-Verbal Originality	.766	.476	.875	.171
N-Verbal Elaboration	.830	.408	.866	.277
Verbal Fluency	.867	— .448	.253	.899
Verbal Flexibility	.633	— .474	.108	.455
Verbal Originality	.805	— .444	.205	.934
Verbal Elaboration	.851	— .416	.264	.881

TABLE 4 (*continued*)

American ($N = 609$)				American teacher ($N = 65$)			
Unrotated		Rotated		Unrotated		Rotated	
I	II	I	II	I	II	I	II
.552	.446	.138	.356	.373	— .009	.316	.199
.676	.551	.167	.887	.577	.570	.164	.794
.725	.609	.167	.885	.693	.609	.239	.891
.745	.534	.231	.901	.646	.663	.170	.910
.870	— .444	.953	.196	.873	— .353	.923	.190
.755	— .412	.844	.147	.743	— .273	.770	.185
.848	— .440	.933	.182	.848	— .423	.940	.118
.842	— .461	.942	.175	.885	— .345	.928	.204

Thus, highly similar factor structures exist between the Irish and American samples, despite significant differences between mean scores for the two groups on six of the eight variables, and despite the use of different materials for the verbal measures. Separate analysis of the data by sex in no way altered the conclusion based on total samples.

The American teachers' factor structure resembles the two adolescent samples in all but the nonverbal fluency variable, which does not cluster with the other nonverbal tasks. This seems to emerge as a separate factor on the third principal component, which had a latent root, very close to unity, of .949.

E. DISCUSSION

Several alternative hypotheses can be offered to explain the findings that Irish adolescents scored significantly lower on six of the eight scales than did their American counterparts and that, despite these differences, similar factor structures were found.

With respect to the differences in mean scores, four possible explanations suggest themselves. First, the curriculum in the Irish schools is highly "traditional," with a heavy emphasis placed on memory of facts in preparation for the state qualifying examinations. The American school, on the other hand, had a much more innovative and flexible curriculum than did the Irish school. Torrance (8, 10) has suggested that "rigid" learning conditions might adversely affect students' ability to perform on tests of divergent thinking.

A second possible explanation is that the Irish students are not as test-wise as are the American students. This was the first experience the Irish students had had with any type of psychological test. Their only experience with tests had been with essay examinations, constructed by the state, which place heavy emphasis on recall of facts.

Macnamara's work (6) suggests a third explanation for the lower scores of the Irish adolescents. The Irish sample, native speakers of English, had learned Irish as a school subject for about seven years. About 40 per cent of school time in Irish schools is spent in learning Irish. Furthermore, many of the children had been taught some of their school subjects through their second language (Irish). Macnamara's findings suggest that it is highly likely that this emphasis on Irish adversely affects the students' standards of English. Thus, bilingual factors may have adversely affected the Irish students' performance, at least on the verbal tests.

The fourth explanation for the mean differences, at least between the verbal tests, is that Irish adolescents may not be as familiar with elephants, the stimulus on their verbal test, as American students are with dogs, the stimulus on their tests. While the use of different stimuli did not seem to affect the intercorrelations, it may have contributed to the mean difference. There may be an interesting methods-factor difference operating here, which should be explored further.

In regard to the finding of similar factor structures across cultures, and over wide age differences (when teachers' data are considered), two alternative hypotheses suggest themselves. First, the trait of divergent thinking may not be affected by cultural variables, age, or education. While the magnitude of the scores might be uniformly affected within a culture by such variables,

the trait itself is not affected, hence the factor structures remain constant. If the trait of divergent thinking is universal and if the tests used to measure the construct are valid, then we would expect similar structures across cultures. These data might be interpreted, therefore, as lending support to the construct validity of the tests used.

The second explanation for the similarities of the factor structures is that the scores reflect a methods factor to a greater degree than they do a trait factor (3). This methods factor is probably not associated with the use of different stimuli for the same test, as the dog and the elephant used in the Product Improvement and Unusual Uses tests produced similar relationships among the scores. It seems likely that the methods factor at work is the scoring procedure followed. Yamamoto, commenting on his scoring procedures, points out:

Naturally these extremely high correlations among the derived creativity scores tend to make the proposed scheme suspect. . . . There is, however, a strong suspicion that these scores are redundant in the sense that they do not measure anything but that aspect of behavior best represented by fluency of ideas (11, p 90).

These data cannot resolve the trait-method problem, but point to the need, as do the Torrance (9, 10), Iscoe and Pierce-Jones (6), and Yamamoto (11) data, for a carefully designed investigation to determine, as far as possible, the amount of systematic variance attributable to the trait of divergent thinking and the amount due to methods factors of content, context, and scoring used to measure the trait. The Campbell and Fiske multitrait-multimethod matrix model (2) or the Analysis of Covariance structures technique of Bock and Bargmann (1) could resolve this question, and thereby extend our knowledge of what is being measured by tests of divergent thinking. This is a needed study of creative thinking at the present juncture of research on the subject.

In the investigation of the trait-method problem on tests of divergent thinking, the design should include different cultures more heterogeneous than the two used in this study, as well as subcultures within each of the larger cultures, so that increased understanding can be had of the effects of cultural factors on the trait. Further, these tests should be validated on the basis of achievement considered creative in each of the cultures to determine the relationship of the trait of divergent thinking to different cultural expressions of creativity.

F. SUMMARY

American adolescents scored significantly higher than Irish adolescents on nine of 11 measures of divergent thinking. Despite these differences, the factor

structures of the tests were highly similar across the cultures. The differences in means are probably related to cultural factors of education, test experience, bilingualism, and cultural relevancy of the stimuli used. The similarities in factor structures are not as easy to explain, and point to the need for carefully designed research across cultures to determine the amount of systematic variance attributable to the psychological trait and the systematic variance attributable to various methods factors.

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CROSS-CULTURAL AND INTRACULTURAL ATTITUDES OF LAPP AND NORWEGIAN CHILDREN*

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A. INTRODUCTION

Contact between the Lapp and the Norwegian culture is occurring at an increasing rate. Northern Norway, the ancestral home of the Lapps, is being opened by new roads, electric power, and an influx of tourists. Improved schools and the increasing industrialization of Norway itself are having their effect on the historical and geographical isolation of the Lapps. In many areas of Northern Norway the Lapps are experiencing complex social and cultural change. The Lapps experiencing these changes tend to become embroiled in conflicts between traditional and new values, between old and new behaviors, and between old and new attitudes.

Eidheim (1) has described how many of the traditional institutions of some Lapp groups have changed or broken down. Communities that at one time had been considered exclusively Lappish have become almost completely assimilated into Norwegian society. As Nesheim (3) indicates, the historical isolation of the Lapps is being destroyed by mass communication and transportation. The technology, science, and values of the larger society are now available to all.

Although the range of assimilation within Northern Norway is a broad one, no community has escaped its effect. Some Lapp communities are culturally relatively intact; others are almost indistinguishable from the Norwegian society.

Contact between cultures, particularly between large complex ones and smaller, more primitive cultures, has usually been characterized by conflict between and within members of the two cultures. The conflict resulting from intercultural contact has taken a variety of forms—intrapsychic, interpersonal, economic, or political. The outcomes of cross-cultural conflicts have generally been resolutions in favor of the dominant culture at the expense of the minority culture.

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There have been, however, a number of cases reported in the anthropological literature of culture contact without conflict. Of particular relevance to this study are the observations reported by Pehrson (5) on the Karesuando mountain Lapps and by Pelto (6) on the Skolt Lapps. Pehrson (5) described a situation of contact between the Swedes and the Karesuando mountain Lapps which is marked by an absence of conflict. He observed that commerce and communication between the two groups occur without the loss of homogeneity or cultural integrity by either of the two cultures. Culture contact between the Skolt Lapps and the Finns is also occurring without obvious conflict. Pelto (6) reports a rapid acceptance among the Skolt Lapps of many new cultural elements of Finnish society without loss of personal integrity or accompanying anxiety.

The present study was designed to test the relationship between cross-cultural contact and intergroup attitudes. It is also concerned with the effects of increasing degrees of cross-cultural contact on the self-esteem of the minority group's members.

B. METHOD

1. *Communities*

The Kautokeino district, the first Lapp community selected for study, is populated by over 95 per cent Lapps. The Norwegians who live in the district are concentrated within the village. To outward appearances the village is indistinguishable from most small Norwegian villages, although the terrain is flatter and the vegetation is scrubbier than can be found in the southern part of the country. Many of the homeowners own automobiles; through the center of the village runs a newly completed road that connects Kautokeino with the coast to the north and Finland to the south on a year-round basis.

The road also connects the summer and winter residence of the nomad Lapps and permits them to move from one place to another with ease and efficiency. The availability of money, and consequently automobiles, permits the nomad's family to move quickly and with large amounts of goods from summer to winter quarters. Although the food requirements of the reindeer still force the nomad males to migrate with their herds, the snow scooter has become a major means of transportation.

The road has not only provided easy, year-round access to and from Kautokeino, but it is also introducing a new kind of employment for many of the Lapps in building and maintaining the road.

Whereas in the past the reindeer provided for almost all of the needs of the Lapps in a rather direct fashion—food, clothing, and transportation, at least

for the nomads—it is becoming more of a commodity to be used in obtaining cash for purchasing a wide variety of manufactured goods and services than it was previously. One can already see a number of Lapps wearing a combination of Lapp and Norwegian-styled clothing. It is not uncommon to see a Lapp wearing a *pesk* (skin coat) and factory-made pants.

Further signs of acculturation can be seen in the various shops of the village. Notices and signs are posted in Norwegian and the clerks speak to the customers in Norwegian even though both of them may be Lapps. The processing of reindeer is beginning to follow the Norwegian pattern in development: in recent years a modern slaughter house has been built in the village, and the nomads bring their herds here to be killed and processed.

The school in Kautokeino consists of the first through the seventh grade for all children, Norwegian and Lapp alike. There is a separate one-year, continuation school after the seventh grade for those children who do not go to the junior high school which is located about 150 miles away in Karasjok. There is also a vocational training school which takes children after the seventh grade, and a *real* school for adults. Those children wishing to continue their education must go to junior high school in Karasjok where they must board. (In 1968 a junior high school will be built in Kautokeino.) The availability of extensive education does not mean that most children take advantage of it—in fact, there are few Lapp children in Kautokeino who go beyond the seventh grade.

The primary school is organized into two sections. One section is attended by the children who live in the village and the other section by rural and nomadic children. The rural and nomadic children are Lapp. Because they live so far from the school they board there, going home during weekends, holidays, and recess. The organization into two sections is an accommodation to the economic and living arrangements of the rural and nomadic Lapps.

The economic and cultural life of the nomadic Lapps is based on the migratory pattern of the reindeer they herd. In spring and fall of each year the reindeer move to the coast and to the mountains and back again; all able Lapps, including older boys, are needed during these biannual passages.

The children in the two sections have little academic contact with each other. The rural and nomadic children (Lapp only) attend one section and the village children (Lapp and Norwegian) attend the other section. The attendance schedule of the village children, although complex, is simple compared to the attendance schedule of the nomadic and rural children. The village children attend school from August through June. Children in grades 1 to 3 go to school three days per week; those in grades 4, 5, and 7 go four days per week; and grade 6 students go five days per week.

There are two headmasters, one for the boarding house and one for the academic schools. There is a possibility for social contact during the rest periods between classes; however, several observations during these rest periods revealed that the children dressed in Norwegian-styled clothing played together and separately from the children dressed in Lapp clothing, indicating a lack of intercultural contact even in this situation.

Karasjok, the second Lapp community selected for study, is also predominately populated by Lapps. This community is geographically about the size of Kautokeino and has only a slightly larger population. The village of Karasjok, though, is considerably larger than the village of Kautokeino; the population of the former is 514 persons and of the latter is 345 persons. According to the school inspector (district superintendent) the number of pupils attending the village school is increasing, while the number of pupils attending the boarding school is decreasing. He also reports a tendency among the younger Lapps to leave the rural areas in favor of village living.

There is widespread evidence of a greater degree of culture contact in Karasjok as compared to Kautokeino. Karasjok has the larger Norwegian population. The residence pattern for Norwegians is also quite different in the two communities. In Kautokeino almost all of the Norwegians are renters. The teachers in Kautokeino, who comprise the largest group of Norwegians, live in government-owned apartments clustered around the school. In Karasjok many Norwegians own their own homes which are interspersed among the Lapp homes. The style of living of the Lapps in Karasjok is closer to the Norwegian pattern than is that of the Kautokeino Lapps. The Lapp homes in Kautokeino have only the most utilitarian kinds of furniture and few of their homes have an inside water supply or cooking facilities beyond the wood-burning stove in the kitchen. In contrast, many of the Lapp homes in Karasjok are furnished with comfortable sitting chairs, gas or electric cooking stoves, and water supplies. One of the greatest observable differences between the two communities is the higher standard of cleanliness and home care found in Karasjok. It is a common sight in a Kautokeino Lapp home to see dirty dishes, dirty pots, and used clothing lying about the kitchen. More often than not the kitchen is used for drying and curing skins. The Lapp home in Karasjok is, in general, the cleaner and the better cared for.

Family organization in Karasjok also differs from that in Kautokeino. In Kautokeino the extended family tends to be the basic social unit, even among nonnomadic Lapps, whereas in Karasjok, except for the nomadic Lapps, the nuclear family tends to be the basic social unit. Other differences between the

two communities exist at the community level. In Kautokeino there is no meeting hall or community center and only a small coffee house for any kind of social public contact. However, the coffee house is frequented only by the Lapps. In Karasjok there are two cafes (both of which serve beer), a hotel, and a community house where dances and public functions, such as bazaars, are held. Karasjok also has a community drama group that puts on dramatic performances using local talent.

Not only has Karasjok more social and public institutions but they are used rather extensively. Much of the social life of the community takes place in the community house. Saturday night dancing is sanctioned in Karasjok, whereas in Kautokeino there are strong strictures on any kind of dancing.

Like many other facets of life in Karasjok, the school system is also larger and more complex than the school system in Kautokeino. In addition to the elementary school, there is a junior high school and a comprehensive high school. As in Kautokeino there are nomadic and rural elementary school children who attend boarding school, although not in the same proportion. Many of the nomads have homes within the village and the rural are not so rural as in Kautokeino, so that many of the children from these families can commute to school on a daily basis.

2. *Groups*

The social structure and organization of Lapp and Norwegian groups can be described in at least two basic ways. There are differences between the various Lappish-Norwegian communities and there are differences between groups within communities. Both kinds of differences are significant and probably affect the individual singularly and in interactions. The sampling procedure used in this study took into account both factors. The two communities, Kautokeino and Karasjok, were selected for studying the effect of varying levels of culture contact on self-concept. Within each of these communities, three groups of Lapp children (nomadic, rural, and village) and one group of Norwegian children were studied. The three Lapp groups can be described as follows:

a. Nomadic Lapps. The social organization among nomadic Lapps is based on a bilateral kinship system. This means, among other things, that both lines of descent are considered to be of equal importance. The mother has just as great an influence as the father in all aspects of family life, although of course roles differ.

The nomadic family group is called a *Siida*, which consists of a group of

individuals and families which migrate and herd together cooperatively. It is the productive and consumer unit of the nomadic Lapps.

During the winter months the nomadic Lapps live in scattered one- or two-room dwellings. In summer they live in tents that they carry with them while following their herds of reindeer and in huts during summer pasturing.

Linguistically, the nomadic Lapps are rather homogeneous. Most of the children beginning school speak only a few words of Norwegian.

The organization of the educational system for the nomads centers around their migratory practices so that the children attend school only periodically. This is the situation in Kautokeino and Karasjok. The periodical school organization is characterized by a high number of weekly school hours during the periods when children are at school. The total yearly school attendance, however, is low. This kind of school organization requires that the children board at the school while they are in attendance. The periodical school is characterized by little parent-school contact and relatively high absence rates. As a group, the children are low academic achievers.

b. Rural Lapps. The social organization of the rural Lapps is based on feelings of affinity among the members. The settlement is grounded on ties of kinship. Financially and socially this group is dependent on their commerce with the nomadic Lapps, except in those instances where income is derived from village centers. The dwellings of this group are also poor, although they live in permanent, year-round homes. Linguistically, they are quite homogeneous. Their children generally begin school without knowledge of Norwegian.

The school system for the rural Lapps is the same as that for the nomadic Lapps. They attend high intensity, periodic, residential schools. Although they generally attend the same schools as the nomadic Lapps, they attend during different periods. The nomadic children go to school from November through March, while the rural children go to school from August until November and from April until July.

The educational factors characterizing nomadic children also characterize the rural children, particularly those of low achievement and high absence rates.

c. Village Lapps. This group of Lapps live in relatively dense population centers. The village comprises the social unit for these Lapps in distinction to the *S'iida* of the nomads. The family in this kind of social organization has lost much of its social function and the Lapps' sense of community is generalized. In this environment cultural change tends to be rapid and dynamic. Acculturation and assimilation is taking place and many of the old norms and values are changing.

3. *Subjects*

Forty-eight pupils were selected from the fifth through the seventh grades in Kautokeino and Karasjok.

In Kautokeino the Norwegian sample comprises the total population of Norwegian children in the selected grades. In Karasjok, the Norwegian sample comprises about 80 per cent of the total population of Norwegian students in the selected grades. The Lapp sample represents between 20 and 50 per cent of the population for each Lapp group in both communities.

Criteria for selecting Norwegian children were language and ancestry. The same criteria were also used for the selection of the Lapp groups, with the exception that for the three Lapp groups occupation and place of residence were also used.

4. *Procedure*

All testing was done in groups of six to eight pupils. Before testing, all of the pupils were given several examples of working with the Semantic Differential scales. The examiner, who was bilingual, gave the directions in Norwegian and, where indicated, gave further directions in Lappish. Two continuous school hours (45 minutes each) were used for the testing. The first hour was devoted to extensive explanations of the procedures and the second hour was used for the actual testing. The Draw-a-Person Test (2) was administered first and the concepts and scales second.

5. *Instruments*

In order to collect the data for the study two projective instruments were used—the Draw-a-Person Test (2) and the Semantic Differential (4) with a set of cultural concepts.

The Semantic Differential scales used in this study consisted of seven steps using bipolar adjectives that progress from a neutral, and therefore meaningless, origin in two directions. Each direction was defined by the linguistic qualifiers: very, some, and little. All of the scales appeared in Norwegian. The left to right ordering of positive and negative scales was randomized to eliminate the possibility of directional set.

Fifteen scales, 12 of which were heavily loaded on the evaluative factor, were selected (i.e., good—bad, dirty—clean, beautiful—ugly).

6. *Concepts*

Eighteen concepts were selected for evaluation. Six were words or phrases that had specific association with the Norwegian culture, six were words or



FIGURE 1
PROFILES OF MEAN SEMANTIC DIFFERENTIAL SCORES ON CONCEPTS FOR NOMAD LAPPS, RURAL LAPPS, VILLAGE LAPPS, AND NORWEGIANS IN KAUTOKEINO

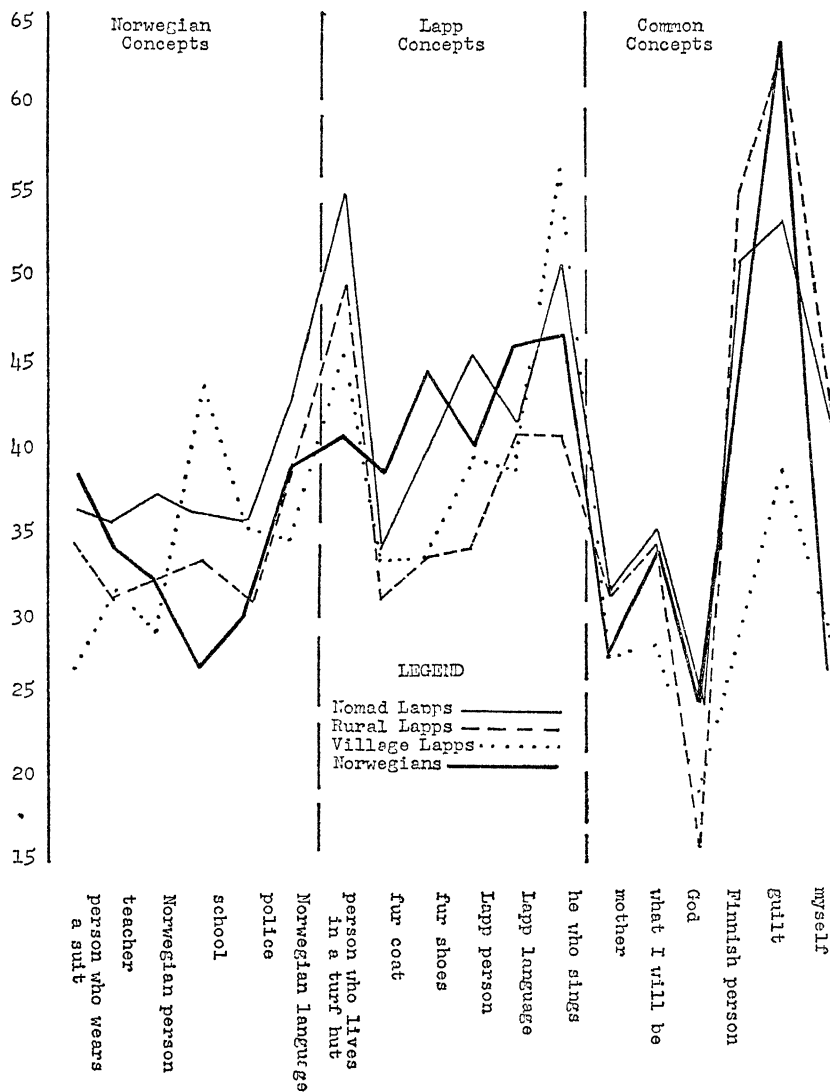


FIGURE 2
PROFILES OF MEAN SEMANTIC DIFFERENTIAL SCORES ON CONCEPTS FOR NOMAD LAPPS,
RURAL LAPPS, VILLAGE LAPPS, AND NORWEGIANS IN KARASJOK

phrases that had specific association with the Lapp culture, and six were words or phrases that had a common cultural association. These concepts can be found in Figures 1 and 2.

The first two groups of concepts were selected to represent obvious cultural differentiation between Norwegians and Lapps. Each concept appeared on a separate page with 15 Semantic Differential scales.

7. *Statistical Analysis*

A mixed model factorial design with two nested variables was used to analyze the data. The main effects pertained to communities (A), ethnic groups (B), and clusters of concepts (D). The two nested variables were individuals (C) within ethnic groups and communities and concepts (E) within clusters of concepts. Communities, ethnic groups, and clusters of concepts were fixed variables. Individuals and concepts were random variables. Components of variance were specified to determine proper error terms for the *F* tests. Quasi-*F* tests were made by using error terms obtained by a subtractive method. A clinical psychologist Q-sorted the drawings into nine piles on the basis of his estimate of the subjects' self-concept.

C. RESULTS

1. *Attitudes*

The results of the analysis of variance are presented in Table 1. Differences between communities, persons, and concepts were found to be significant beyond the .01 level. There was also a significant interaction at the .01 level between communities and ethnic groups. The other main effects and interactions did not approach significance.

Of all the main effects and interactions in the analysis of variance model used, only the $A \times B \times D$ interaction has relevance to the question of intergroup attitudes among Lapps and Norwegians. The results of this interaction indicate that there is no significant difference between Lapp and Norwegian attitudes toward themselves or each other in communities of different degrees of intercultural contact.

The obtained significant difference between communities indicated the efficacy of choice in the selection of communities. Significant differences between concepts and persons are also related to selection factors.

Although the $A \times B$ interaction was significant, it is not interpretable within the analysis of variance model, since it utilizes variables which cross all of the concept clusters. It does indicate that across all concepts there is an

interaction between ethnic groups and communities, but does not reveal how the interaction is related to specific concepts. In order to analyze this interaction, the means of the specific concepts within clusters for each ethnic group within each community were graphed. They are presented in Figures 1 and 2. Although there are no statistical procedures to test the significance of the relationship between ethnic groups in communities by concepts, it can be seen

TABLE 1
SUMMARY OF ANALYSIS OF VARIANCE OF THE SEMANTIC DIFFERENTIAL AND
FOR THE DRAW-A-PERSON TEST

Source	Sum of squares	df	Mean square	F
<i>Semantic Differential</i>				
Communities (A)	1 652.9	1	1 652.9	10.79**
Ethnic groups (B)	4 178.6	3	1 392.9	1.61
A \times B	2 509.6	3	836.5	4.70*
Persons C (AB)	32 434.2	40	810.9	6.15*
Clusters of concepts (D)	6 301.2	2	3 150.6	0
A \times D	15.3	2	7.7	0
B \times D	2 786.1	6	464.3	2.00
A \times B \times D	1 626.5	6	271.1	1.52
C (AB) \times D	14 007.6	80	175.1	1.33
Concepts E (D)	52 121.8	15	3 474.8	29.34**
A \times E (D)	1 647.8	15	109.9	0
B \times E (D)	8 470.5	45	188.2	1.43
A \times B \times E (D)	6 055.1	45	134.6	1.02
C (AB) \times E (D)	79 116.9	600	131.9	
Total	212 924.1	863		
<i>Draw-a-Person Test</i>				
Communities (A)	1.04	1	1.04	0 ^a
Ethnic groups (B)	8.95	3	2.98	1.12 ^a
A \times B	12.68	3	4.23	1.50 ^a
Within	106.93	40	2.67	
Total	129.50	47		

^a Nonsignificant.

* Significant at .01 level.

** Significant at .001 level.

from inspection of the graphs that the ethnic groups in Kautokeino are further apart in their ratings of concepts than are the groups in Karasjok.

Distance scores between ethnic groups for each concept were computed. The distance scores indicated that the ethnic groups in Karasjok are more homogeneous in their attitudes than are the groups in Kautokeino on Lapp and Norwegian concepts. This greater homogeneity of attitudes, as can be seen from Figure 1, is a result of the Lapp attitudes being close to the Norwegian profile of attitudes. The profiles of the Norwegian groups between com-

munities can be seen to be more similar than the attitudes of the Lapp groups across communities.

Among the common concepts cluster, there tends to be a reversal of the pattern resulting in greater homogeneity of attitudes in Kautokeino than in Karasjok. It is possible that this reversal is due to the larger number of religious concepts in the common cluster and the more dominant role of the church in Kautokeino than in Karasjok.

2. *Self-Concept*

The psychologist's nine-pile Q-sort ratings of the drawings were analyzed by a 2×4 analysis of variance. The independent variables were the two communities and the four ethnic groups. The results of this analysis are also presented in Table 1. As can be seen, there were no significant differences between children's self-concept between communities, between ethnic groups, or ethnic groups within communities.

D. CONCLUSIONS

It was found that there were no differences in self-esteem between Lapp and Norwegian children living in two communities of different degree of intercultural contact. It was also found that intergroup and intragroup attitudes among these children were generally favorable in both communities. It must be concluded, from these data, that in and of itself increased contact between two cultures does not necessarily result in negative intergroup and intragroup attitudes.

E. DISCUSSION

Since the sample used in this study represents children from the fifth through the seventh grades, the generalizability of the findings cannot be extended to the adults in these communities. However, it does seem reasonable to hypothesize that because of the great social class difference between the Lapps and Norwegians there is a minimum of conflict between them. It must also be recognized that social change is just beginning for the Lapps. Although they are acquiring more of the artifacts of the Norwegian culture, they have not in any major way become involved in interpersonal relations or economic conflict with Norwegians. Finally, since the Lapp culture is a highly materialistic one, the acquisition of Norwegian artifacts (i.e., snow scooter, wood houses, etc.) in and of itself does not radically challenge their traditional way of life.

Many of the teachers have lower academic expectations for Lapp children

than they do for Norwegian children. This lower academic expectation of teachers is the result of an unusual paradox. The teachers who work with the Lapp children are generally of two kinds. One group consists of young, inexperienced, and uncommitted teachers who went north in order to earn the extra pay. Most of them leave and go south again after two years, although a small number do stay on. The other group consists of highly dedicated persons who are genuinely committed to helping the Lapps. In general this group has a somewhat idealized, romantic notion about what education for the Lapps should be. They are concerned about the preservation of the Lapp culture and to an extent are assimilated in reverse. These teachers wear Lapp clothing, pursue Lapp crafts and songs, and cook Lapp foods. They are sensitive to the difficulties of adjustment that Lapp children have in school and do all they can to reduce the children's anxieties and frustrations. One of the ways they do this is to expect less and demand less.

The two Lapp communities selected for this study are just embarking on a period of significant contact with the Norwegian culture. The interface of the two cultures has thus far not been in areas of conflict. Changes in values, traditions, and behaviors have not yet occurred to any great degree. However, areas of contact are widening, and it is only a question of time as to when the traditional isolation of these two communities will disappear. The requirements of reindeer herding, the central cultural theme of Kautokeino and Karasjok, has resisted the influence of Norwegian culture thus far. But this economy involves a minority of the Lapps. Mechanization of reindeer husbandry, provided by the Norwegian culture, will in the future drastically change the Lapps' traditional occupational roles and functions. As more Lapps are separated from the traditional mainstay provided by reindeer herding, the potential for intercultural conflict will increase. Further studies are needed to identify points at which these potentials for conflict might be realized.

F. SUMMARY

This study was designed to test the relationship between cross-cultural contact and intergroup attitudes. It is also concerned with the effects of increasing degrees of cross-cultural contact on the self-esteem of the minority group's members.

Two Lapp communities and four groups were selected; the four groups consisted of nomadic Lapps, village Lapps, rural Lapps, and Norwegians. The subjects studied were pupils from the fifth through the seventh grade. The Semantic Differential and the Draw-a-Person Test were used. It was found that intergroup and intragroup attitudes among all children were favorable

in both communities. It was also found that there were no differences in self-esteem between Lapp and Norwegian children living in two communities which had different degrees of intercultural contact.

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MAZE PERFORMANCE AND PERSONAL, SOCIAL, AND ECONOMIC ADJUSTMENT OF ALASKAN NATIVES*

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A. INTRODUCTION

The attempt to assess the endowment of individuals among different cultures or subcultures has been an ever-present challenge to psychology and education. This particular assessment problem is not only one of considerable academic interest but also one of applied interest, since there is a growing need for reliable and valid instruments to be used for practical purposes. Such a need is particularly evident in programs geared to upgrade the social functioning of culturally deprived groups. The intelligent use of appropriate testing should help such programs develop increasingly meaningful educational and rehabilitation procedures. Furthermore, the development of improved measurements should lead to more realistic selection and placement of individuals for special programs.

This present study was initiated by a research project¹ which is studying basic problems associated with the present and anticipated needs of a changing Eskimo society. One specific problem under investigation has been to develop further means of identifying individuals capable of benefiting from specialized services. Of necessity, the assessment of a native's capacity has been based largely upon an appraisal of his social responsibility at the village level and is generally influenced by his educational level and ability to communicate in English. In the search for a broader basis of assessment, the Circular Pencil Maze Test (CPM) was singled out for investigation. Although previous experience with this test has indicated that its scores do not bear a particularly high relationship to conventional measures of intelligence, maze performance has been shown to be related to various indices of self-management (1, 3, 5). The practical implications of these findings, the ease of administering and scoring the mazes, and the likelihood that maze performance would be relatively

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culture free were all factors in the authors' decision to study the interrelationships of maze performance with other personal characteristics of the Alaskan native.

B. METHOD

1. *Subjects*

In the ongoing activities of the aforementioned project, three villages—Tununak, Hooper Bay, and Nulato—were visited during November 1965, March 1966, and August 1966, respectively. Tununak and Hooper Bay are coastal villages on the Bering Sea within 175 air miles west of Bethel, Alaska. Tununak has a total population of 239 (of which 236 are Eskimo) and Hooper Bay, 528 (of which 519 are Eskimo). By American standards the villages are primitive and are without modern conveniences. Both have a Bureau of Indian Affairs School, and Hooper Bay has a new Public Health Service Clinic. The influence of modern civilization is evident in the simple frame houses (subsidized by the Alaska Housing Authority in the early 1950s), the motorized ski-doo's replacing the dogsleds, and a village wireless communication set-up for contact with other towns. Hunting, trapping, and fishing are still the main occupations with summer employment available in commercial canneries outside the village. A few families may earn as much as \$5000, but the average family income is estimated to be \$1000 a year. Nulato is an interior Athabascan Indian village on the Yukon River about 350 air miles northeast of Bethel. It has a population of approximately 300 and the major occupations again are hunting and trapping.

As many adult natives as possible were tested within the time available for each village visit. A total of 61 ($\frac{2}{3}$ of the adults in Tununak) and 95 ($\frac{1}{2}$ of those in Hooper Bay) were given the CPM. These samples are considered representative of the total adult population for these two villages. Only 30 mazes were administered in Nulato, which is about $\frac{1}{4}$ of the adult native population and cannot be considered representative, since many of the hunters and trappers were not available for testing at the time of the village visit.

The distribution of subjects according to age and sex was similar in the three villages. Altogether 91 males and 95 females were tested and their ages ranged from 17 to 78. The mean educational level for the Nulato subjects was 6 years in comparison to 3.9 for Tununak and 4.8 for Hooper Bay, and is consistent with the known sample bias for Nulato.

2. *Instruments*

The CPM test is a small booklet consisting of 13 progressively more difficult circular pencil mazes. The scoring system is based upon errors made by

entering blind alleys. The norms established by Peters (7) for normal adult Americans were used in this study. The CPMs were administered in groups and occasionally in individual sessions. In Tununak and Hooper Bay a slight variation in instruction was made: namely, the subject was told to imagine he was a fox trying to get out of a trap. Evidently the test was challenging to them, since the natives were voluntarily seeking out the staff to "try the fox game."

The Cornell Medical Index (CMI) is a questionnaire designed to reflect physical and emotional problems. The CMI has been shown to be related to adjustment of Eskimos in a study by Nelson *et al.* (6), even though cultural attitudes may predispose a healthy Eskimo to say YES to a question that may be answered NO by a healthy American counterpart (2). In Tununak, it was necessary to use some of the villagers to serve as interpreters for the questionnaire. The CMI administration was improved considerably in Hooper Bay with the addition of a project staff member who was able to serve as the sole translator. The questionnaire was not administered in the Nulato study. The distribution of CMI scores in the present study was divided into quartiles. Scores falling in the first quartile were arbitrarily called good adjustment, and those in each successive quartile called above average, below average, and poor.

Age, sex, occupation, and education were obtained by questionnaire and are considered reliable. Unfortunately, not all of these data could be collected for each of the 186 subjects who had taken the CPM. Occupations of subjects, such as store manager, teacher, and medical aide, were called "specialized"; all others, including cannery worker, hunter, fisherman, and housewife, were called "trades."

Determination of political leadership was based upon current membership on the village council. The determination of social leadership was less objective and could be carried out only for Tununak and Hooper Bay. A total of 10 individuals from Tununak and 18 from Hooper Bay were selected² as persons to whom the natives looked for help and guidance. These selections were made independently by one of the project members who had previously been a nurse with Arctic Health Research, at which time she had become well acquainted with the villagers' social responsiveness.

3. Procedure

The mean CPM scores were computed for subjects categorized according to appropriate subdivisions of sex, age, education, occupation, emotional ad-

² CPMs not available for four subjects.

justment, political leadership, and social leadership. The significance of the differences among the means was then evaluated by an analysis of variance.

The relationship of education, emotional adjustment, and maze performance was also analyzed within a select group of 32 subjects from Tununak and Hooper Bay. Individuals having specialized occupations, political leadership,

TABLE 1
MEAN MAZE PERFORMANCE OF 186 ESKIMO NATIVES ACCORDING TO SEX, AGE,
EDUCATION, LEADERSHIP, AND ADJUSTMENT

Variable	Sub-category	N	Mean CPM	SD	Significance level ^a
Sex	Male	91	51.44	12.31	.01
	Female	95	45.49	12.95	
Age	36-78	93	47.53	12.90	n.s.
	17-35	82	50.10	12.68	
	Unknown	11	43.18	14.09	
Education	9-13	23	59.04	9.61	.001
	7-8	43	50.21	12.67	
	1-6	75	47.03	12.65	
	None	35	41.86	10.54	
	Unknown	10	49.40	14.40	
Occupation	Specialized	20	57.95	8.85	.001
	Other	166	47.25	12.95	
Emotional adjustment	Good (0-17)	36	56.42	10.17	.001
	Above ave. (18-34)	34	48.56	12.97	
	Below ave. (35-51)	39	45.67	13.05	
	Poor (52-117)	39	41.03	10.05	
	Unknown	8	51.25	12.41	
Political leadership	Council member	11	54.55	8.19	n.s. *
	Other	175	48.02	17.37	
Social leadership (Tununak & Hooper Bay only)	Yes	24	56.75	8.50	.001
	No	132	46.30	12.88	

^a Analysis of variance was employed to test for significance

* Note heterogeneity of variance.

social leadership, or any combination of these were identified and categorized into one of three levels of social responsibility: (a) political or social leadership and a specialized occupational level, (b) political or social leadership and trade level occupation, and (c) specialized occupational level but not identified either as social or political leader. The significance of the differences among the means for each variable and categories of social leadership was evaluated by an analysis of variance.

C. RESULTS

The relationship of maze performance to each of the main variables is given in Table 1. Higher maze scores were significantly associated with natives who were identified as males having more education, being in specialized occupations, and having better emotional adjustment than other subjects, and showing social leadership. There also was a substantial trend for those showing political leadership to have higher maze scores than other subjects. There was no relation between age and CPM scores, although the younger ones had a slightly higher mean score than did the older ones (see Table 1).

The patterns of maze performance, education, and emotional adjustment

TABLE 2
SOCIAL-ECONOMIC-POLITICAL LEADERS AND EDUCATION, CPM, AND CMI

Variable	Leadership category			F	Level of significance ^b
	Political, social, and economic leadership (N = 8)	Political or social leadership only (N = 18)	Economic leadership only (N = 6)		
Education ^a	9.14	4.63	7.33	6.43	.01
CPM	57.13	55.22	59.50	0.53	n.s.
CMI	14.25	20.89	24.83	0.93	n.s.

^a Years of schooling not available for one subject in the first category and for two in the second

^b Analysis of variance was employed to test for significance.

are presented in Table 2 for the select group of 32 natives showing various levels of political-social-economic leadership. Mean maze scores fluctuated between 55.22 to 59.50 and CMI scores from 14.25 to 24.83 without any of the differences being statistically significant. The differences among the mean educational levels which ranged from 4.63 to 9.14 were, however, significantly different at the .01 level.

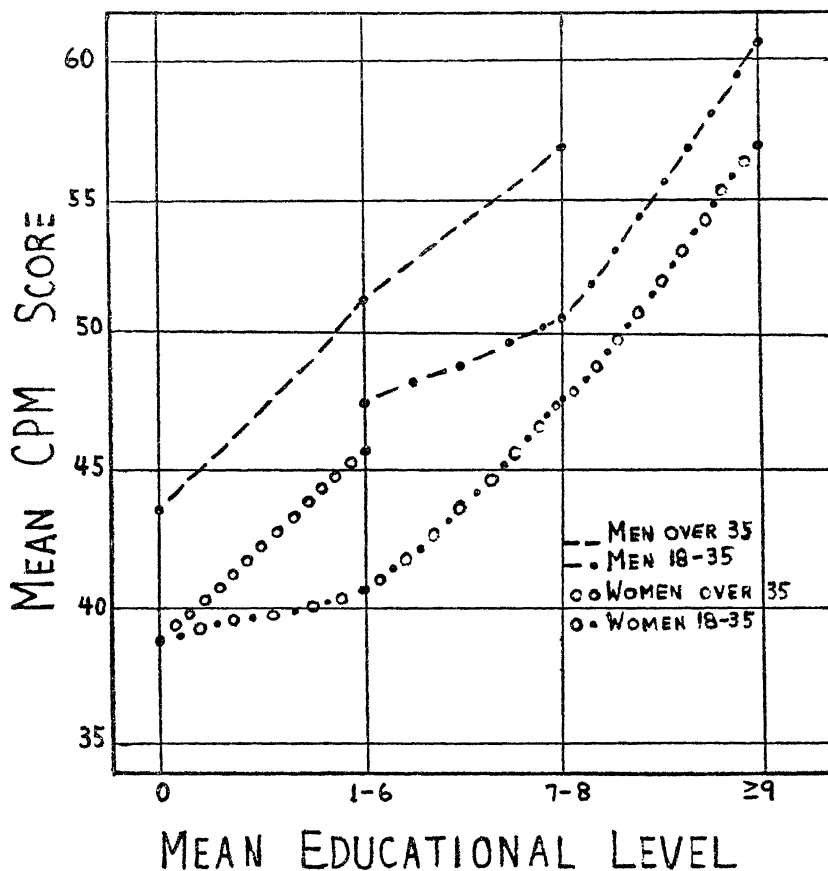
D. DISCUSSION

These results provide evidence for the construct validity of maze performance as a measure of native Eskimo endowment. In other words, the ability to solve mazes is significantly associated with high levels of employment, education, social leadership, and emotional adjustment. Moreover, the failure of CPM scores to differentiate significantly political leaders from other subjects may be due to the atypical distribution of scores. Actually 10 out of 11 of the members, or 91 per cent, had CPM scores of 45 or higher in comparison to 103 out of 175, or 59 per cent, of the other subjects. The difference in these per cents is statistically significant at the .05 level (chi square = 4.41).

The high relationship between maze performance and education raises the question of whether maze performance is not simply a measure of previous education instead of intelligence. Although the results cannot answer this question definitively, they do suggest that formal education *per se* has little effect. The most convincing evidence is that the mean maze score for the total native group is 48.39 in spite of a mean educational level for the natives of 4.8. This value is approximately equal to the mean of 50 established for adult Americans by Peters. In addition, it can be seen from Table 2 that among the select subjects there is significant variation in mean educational level but *not* maze performance. Other relevant findings are given in Figure 1. Between groups having the same educational level, the older subjects have a higher mean CPM score than the younger ones. These data imply that other factors besides formal education may contribute to maze performance.

It is hypothesized that the culture as a whole rather than innate sex differences is a major factor in the significantly depressed CPM scores for women. In light of this hypothesis, there are some indications that such a cultural influence may be on the wane. Proportionally more of the younger generation are getting increased education and the younger females who were permitted to go beyond the 6th grade show mean scores closer to that of young males with similar schooling (see Figure 1). In another study (4), a group of 25 young adult male and 25 female Eskimo natives in an off-reservation school had identical mean scores on the CPM. Whether this relative improvement in maze performance of the younger women reflects conditions that may advance the adjustment of the young natives, or cause dissatisfaction and unrest, is a problem to be investigated further.

The interrelationships among maze performance, emotional adjustment, and sex were further investigated. The data presented in Table 3 indicate marked sex difference in health scores for Tununak but not for Hooper Bay. In Tununak, the difference between the total mean CMI scores for males and females, 20.9 and 61.5, respectively, was significant at the .001 level ($F = 48.13$). The difference between mean CMI scores in Hooper Bay for males (31.2) and females (38.0) was not significant ($F = 2.55$). Since Tununak is the more "traditional" of the two villages, it is tempting to assume that the males enjoy relatively greater personal freedom and satisfaction than their mates; whereas in Hooper Bay "equalization" has been taking place. Unfortunately, the difference in administration of the health questionnaire in the two villages could have been a major factor in these results. Review of the data revealed that in Tununak the male native who interpreted the questionnaire to his fellow citizens had, himself, a CMI of 9 and the



DISTRIBUTION OF SUBJECTS

— 5	27	8	0
-• 0	6	11	13
○○ 11	21	(2)	(1)
○• 15	14	21	9

FIGURE 1

THE INTERACTION OF AGE, SEX, AND EDUCATION WITH MAZE PERFORMANCE

mean of the males was 20.9. The three females who interpreted it to groups of village women had scores of 54, 72, and 89, and the mean Tununak female CMI score was 61.5. Hence, the male-female differences in Tununak could simply reflect interpreter bias.

It is believed that analysis of qualitative aspects of maze performance, along the lines suggested by Porteus (8) and Peters (7) in addition to the quantitative system based on errors alone, could yield further useful information. Analyses of these sort await further study. However, a crude attempt was

TABLE 3
MEAN CMI SCORES AND INTERACTION WITH VILLAGE, SEX, AND MAZE PERFORMANCE

Village	Sex	Maze scores	N	Mean CMI score (Maladjustment)
Hooper Bay	M	55-73	20	21.7
		45-54	14	31.2
		27-44	13	46.0
	F	55-73	12	27.8
		45-54	8	39.9
		27-44	20	43.3
Tununak	M	55-73	10	13.6
		45-54	8	21.6
		27-44	8	29.4
	F	55-73	4	55.0
		45-54	11	50.4
		27-44	20	68.9
Total group		55-73	46	24.2
		45-54	41	35.3
		27-44	61	54.5

made to demonstrate the potentialities of a more global evaluation of maze performance. One of the authors (Kunce) was challenged earlier in the study to select the leaders on the basis of the maze protocols alone from the Tununak study. This author and three of his associates (two vocational counselors and psychometrist) each independently chose 10 mazes which were thought intuitively to reflect a performance suitable of a leader. This procedure yielded 16 different protocols. Of these 16, six had been chosen independently by the project nurse as leaders. None of the remaining 45 protocols which had not been selected as leaders was identified by the nurse as a leader. Further research is needed to quantify what qualitative aspects of performance were meaningful before such an approach can be useful to those inexperienced with the use of this test.

E. CONCLUSION

The Circular Pencil Mazes offer a quick and valid means of obtaining a gross estimate of a native's capacity. For example, of the 32 natives from

Tununak and Hooper Bay selected as having demonstrable political, economic, or social leadership, 72 per cent had maze scores greater than 50, 25 per cent had scores between 40-49, and only 3 per cent had scores less than 40. For the other 124 subjects in these villages, the percentages, respectively, were 33, 28, and 47. The difference between these percentages is significant far beyond the .001 level (chi square—19.49). The data support the practical application of this test to provide clues of possible strengths and limitations of culturally impoverished subjects which may not be readily apparent from other indices of social functioning and clinical judgment.

F. SUMMARY

A total of 186 native Eskimos were administered the Circular Pencil Mazes in three remote villages in Alaska. Performance on the test was evaluated with respect to age, education, sex, emotional adjustment, occupational level, political leadership, and social leadership. Results of the study lend construct validity to the hypothesis that maze performance is a measure of intellectual functioning for this population. The mean standard score for this unique population was also close to the norm established for American adults (48.39 *vs.* 50.00), suggesting that this test may also be a relatively effective non-cultural measure of intelligence.

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SEX AND AGE AS VARIABLES IN PERSUASIBILITY* ¹

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A. PURPOSE

Previous research by Janis and Field has demonstrated that there is a sex difference in susceptibility to persuasive communications (3). In their experiment, female subjects 16 years of age were found to be significantly more persuasible than were male subjects of the same age. This was subsequently confirmed in an experiment by King, who utilized subjects of the same age (4). In addition, when the Janis and Field study was later repeated by the present senior author with subjects 19-20 years of age, the same result was observed (5). However, as Hovland and Janis have pointed out, this research, like so many phases of systematic research in social psychology, is based on studies conducted in the United States. Cross-national and cross-cultural studies on a problem of this kind, they note, would have the desirable effect of extending the scope of communication research (2).

Accordingly, in the present study the authors' purpose was to determine if the observed sex differences in persuasibility reflect unique features of our own culture, or if the differences are universal. In addition, another purpose was to determine if sex differences in persuasibility would be observed in subjects of different ages from those utilized in previous studies. Finally, the authors were interested in exploring the relationship between persuasibility and chronological age.

B. METHOD

1. *Part I*

Two hundred ninety-one students enrolled in sophomore-level college classes in six widely separated cultural areas participated in the first part of this study. In addition to the United States, the countries involved were

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¹ Special thanks go to Larry Rogers, Pennsylvania State University, who supervised the section of the study dealing with age differences in persuasibility.

Rhodesia, Lebanon, Brazil, and Peru. One group of subjects enrolled in the Chinese University of Hong Kong also participated. All subjects responded to a modified version of a test of persuasibility developed by Janis and Field. The test consists of three parts: (*a*) an Initial Questionnaire designed to measure opinions on 15 items—i.e., three different questions on each of five issues; (*b*) Booklet I containing persuasive communications related to the five issues mentioned in the Initial Questionnaire; and (*c*) Booklet II containing another series of five persuasive communications on the same issues as in the first booklet, but taking exactly the opposite positions to those presented in Booklet I.

Following each of the five communications in the two booklets, the subject was asked three questions. Thus, he expressed his opinions at three different times—once on the Initial Questionnaire, once after reading the first set of persuasive communications, and once after reading the second set of communications. A total of 15 questions were answered by each subject on each part of the test.

The test score for each subject is the sum of the number of questions on which he changes from his initial questionnaire position in the direction of the communication. Since only the direction of change is counted, the scores on the test range from zero to 30.

The Initial Questionnaire and Booklet I were administered in the first session. Subjects were told, in connection with the Initial Questionnaire, that it was being given as part of a "survey to find out what opinions people have on several different subjects." Prior to reading Booklet I they were told that the experimenter "wanted to know whether they agreed or disagreed with the articles" which, it was said, had been written by "reporters presenting their opinions on controversial topics." One week later, Booklet II was administered along with instructions similar to those given prior to Booklet I. In each case, the experiment was conducted by a local professor. Hence the project was not perceived by subjects as being American in origin. Also, the questionnaires and booklets were presented to subjects in the language appropriate to the area: i.e., Portuguese, Arabic, etc.

The five issues employed in the test used in Brazil, Hong Kong, Lebanon, Peru, and the U.S. included (*a*) prospects of discovery of a cure for cancer, (*b*) evaluation of Hindenburg as a German leader, (*c*) evaluation of a fictitious TV comedian, (*d*) desirability of classical music on the radio, and (*e*) responsibility for the war in Viet Nam. All but the last of these issues were employed in exactly the same form in the test devised by Janis and Field. The Viet Nam issue was employed in the present test to replace an issue on civil

defense—a topic having little meaning in most of the countries where the authors worked. In Rhodesia, the Viet Nam and TV comedian issues were replaced by (a) desirability of “plankton” as a food and (b) desirability of Australian plans to build a large dam in that country.

2. Part II

In the second part of the study the authors administered their revised (Brazil) version of the test to four different groups of American subjects. The first group consisted of fifty-one 14-year-old students attending a mid-western high school. The second group included forty-seven 16-year-old students from the same high school. Group three consisted of fifty-six 19-year-old students in sophomore level classes at North Dakota State University, and the fourth group consisted of 28 young adults ranging in age from 28 to 32 years.

C. RESULTS AND DISCUSSION

1. Part I

Persuasibility scores for subjects in each cultural area are shown in Table 1. With the exception of Lebanese subjects, the scores for females are all higher than those for males. A *t*-test of these differences, however, revealed that only the male-female difference in Hong Kong was significant.

TABLE 1
DIFFERENCES BETWEEN MALES AND FEMALES IN PERSUASIBILITY SCORES^a

Cultural area	Male			Female			<i>t</i> -test	<i>p</i> -value
	<i>N</i>	Mean	<i>SD</i>	<i>N</i>	Mean	<i>SD</i>		
United States	31	7.97	5.05	44	8.89	4.51	.81	n.s.
Hong Kong	24	6.87	4.17	20	10.60	3.58	3.13	< .01
Rhodesia	25	8.24	3.46	30	9.13	4.49	.81	n.s.
Lebanon	25	6.48	3.07	17	6.35	4.01	.11	n.s.
Latin America	54	9.15	5.62	21	10.48	3.89	.98	n.s.

^a Because of the small number of Brazilian males tested, the data from Brazil and Peru are combined in this table.

2. Part II

The results in the first part of this study were surprising to the authors, particularly in view of their own prior research with American subjects of the same age (19-20) in which females were found to be significantly more persuasible than were males. The data obtained from American subjects, presented in Table 1, clearly contradict these previous findings.

Since the authors utilized a modified version of the persuasibility test in the cross-cultural experiment, their initial reaction was that this failure to confirm their previous findings with American subjects might be a function of the alteration of the test. However, since Janis and Field (3) and King (4) had employed high school subjects in their studies in which females were found to be more persuasible than males, there also appeared to be a possibility that the age of the subjects might be the crucial variable.

Consequently, the authors decided to administer their revised version of the test to the younger age group utilized in these previous studies. When this was done, the authors observed the same finding reported by previous investigators: there was a significantly higher mean persuasibility score for 16-year-old females than for males of the same age.²

TABLE 2
DIFFERENCES IN PERSUASIBILITY SCORES OF MALES AND FEMALES IN FOUR AGE GROUPS^a

Age group		Male			Female			<i>t</i> -test	<i>p</i> -value
		<i>N</i>	Mean	<i>SD</i>	<i>N</i>	Mean	<i>SD</i>		
I.	14 years	20	14.7	4.76	31	12.6	5.93	1.316	n s.
II.	16 years	29	13.1	3.79	18	16.4	4.34	2.717	< .01
III.	19 years	21	11.6	5.39	35	12.4	3.97	.667	n s.
IV.	28-32 years	14	7.1	3.97	14	10.1	5.81	1.590	n s.

^a Overall scores are somewhat higher in this table than in Table 1 because a slightly different scoring system was used in obtaining these data.

This evidence strongly suggested that there might be a sex-age interaction, such that sex differences in persuasibility are significant at certain ages but not at others. Some evidence for this was found in a study by Abelson and Lesser in which no significant differences in persuasibility were observed between 6-year-old boys and girls (1).

To evaluate age of the subject as a variable in persuasibility, the authors administered their revised test to an intermediate age group (14 years), to *another* sample of college-age subjects (19 years), and to an older group (28-32 years). This was in addition to the 16-year-old age group mentioned above. These results are presented in Table 2.

These data suggest that sex differences in persuasibility exist among American adolescents but not among younger or older subjects. In this connection, as Hovland and Janis have noted,

the fact that sex differences in degree of persuasibility do not emerge in young children is not necessarily incompatible with the finding that there are clear-cut differences between older males and females. A develop-

² See line two in Table 2.

mental factor may account for both sets of findings: during early childhood the social norms and verbal training which influence responsiveness to communications may be essentially the same for both sexes; but then, at a later phase of development (perhaps during puberty), there may be powerful social pressures, associated with sex typing and differentiated sex roles, which could give rise to somewhat different predispositions in young men and women (2, p. 238).

In short, during adolescence in our culture, the greater degree of submissiveness on the part of girls as compared to boys may be due to the culturally defined sex roles appropriate to that age. Consequently, in this age group, females are significantly more persuasible than are males. Three separate studies have confirmed this. On the other hand, in two out of three studies conducted with American college-age subjects, no significant sex differences were observed.

Next we turned our attention to the question of the relationship between persuasibility and chronological age. In Table 2 it will be noted that there is a consistent decline in persuasibility scores for male subjects as a function of increasing age. The same is true of female subjects, except for the youngest age group. When the various age groups were compared by means of *t*-tests, all of the male age groups differed significantly except numbers I and II, and numbers II and III. The female groups differed significantly except for numbers I and III, I and IV, and III and IV. Thus it appears that, in general, younger subjects are more persuasible than older subjects, regardless of sex.

In the cross-cultural data presented in Table 1, only the sex difference among Chinese subjects in Hong Kong was found to be significant. The authors suspect that in the Chinese culture of Hong Kong the female role appropriate to this age group (19-20 years) is characterized by acquiescence and submissiveness, in contrast to the male role of dominance and independence. As a result, females in this culture are more persuasible than are males. In the other cultures tested, while there may be socially determined differences in sex roles, such differences do not appear extreme enough to dictate differences in persuasibility between the sexes. Of course, in view of the preceding sections of this paper, it must be concluded that the age of the subjects may be crucial. Younger or older subjects may reveal sex differences in persuasibility as determined by the sex roles appropriate to the particular cultures.

D. SUMMARY

The present study has demonstrated that persuasibility and chronological age appear to be related, at least in our culture. Older subjects, regardless of

sex, appear less persuasible than younger subjects. In addition, sex differences in persuasibility appear most consistent during adolescence in this culture. Female adolescent subjects score significantly higher than males on a test of persuasibility. Finally, in a cross-cultural comparison of young adults, only Chinese subjects revealed a significant sex difference in persuasibility of the type observed among American adolescents. As suggested in this paper, it is believed that such differences reflect socially determined sex roles dictating submissiveness in the female and independence in the male.

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A CROSS-CULTURAL INVESTIGATION OF OCCUPATIONAL STEREOTYPES IN THREE SOUTH AFRICAN GROUPS¹

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A. INTRODUCTION

The study of occupational stereotypes has, in the past, concentrated to a large degree on the evaluation of different occupations according to their prestige image (5, 6, 13, 14, 17, 19, 22, 23). A comparison of these investigations shows that there is a remarkable consistency in the hierarchical order of prestige rankings, whether undertaken in industrialized nations (8, p. 339) or nonindustrialized ones (10, 12, 22).

Other attempts have been made to arrange jobs in different categories which are relatively independent of each other. Hatt reported three classification systems: classification according to occupational duties, according to occupational prerequisites, and according to occupational rewards (7). He further tried to establish a classification system according to perceived status of jobs. Another classification system was arrived at by means of factor analysis (2, 3).

In order to investigate the factorial structure of occupational stereotypes, three groups were tested in South Africa. Two of them, the White English-speaking and the White Afrikaans-speaking groups, are highly similar as regards level of industrialization but differ in their language, religion, and historical background. The third group consisted of "Cape Coloureds" (persons of mixed African and White descent), which are nonindustrialized, especially in the area where the testing took place. On the other hand they have the same language and religion as the Afrikaans-speaking Whites, but are kept separate from them by South Africa's "Apartheid" laws.

If the conclusions of the previously mentioned authors are valid, there should be no significant difference between the three groups as regards their rankings of occupations and their factorial structures. However, it has to be

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¹ This report presents an extension of a paper read by the first-mentioned author at the 18th Congress of the South African Psychological Association, Johannesburg, 1966.

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kept in mind that, as a result of governmental policy, only the White groups have no serious restrictions placed on their occupational aspirations, whereas the Coloureds (as well as Africans and Asiatics in South Africa) are severely restricted in this respect by a multitude of laws (so-called "job reservation" for different ethnic groups), by a relatively lower standard of living, and by various other social and political pressures exerted on them. No Coloured person is, for instance, allowed to occupy a more senior position than a White person if he works in the same organization. The result is that higher positions are generally (and often exclusively) held by Whites, and the lower ones by Coloureds. Since North and Hatt (14) found that persons on a low economic level showed more respect for skilled and semiskilled jobs than did persons on a high economic level, it could be expected that middle-class occupations would be regarded more highly by Coloureds than by Whites. Furthermore, Grunes found that members of the middle and lower class differentiated between jobs to a lesser extent than did upper-class members (4).

The question seems relevant whether this differentiation is only dependent on the specific criteria, such as social status, according to which the jobs were evaluated. But Steffire (21) found that his various criteria—viz., prestige, altruism, control, education, job freedom, intelligence, money, security, and self-realization—had such high intercorrelations that it was possible to extract one factor only on which almost all of the abovementioned criteria were represented to a high degree.

B. METHOD

All in all, 127 pupils in their 11th year of school were tested. Of these, 48 were Afrikaans-speaking White pupils, 29 were Afrikaans-speaking Coloureds, and 50 were English-speaking Whites. They were asked to rate the 20 occupations listed in Table 1 by means of a seven-point Semantic Differential (15). Each scale consisted of 10 bipolar adjective pairs,³ as follows: (a) *desirable*—undesirable, (b) *successful*—unsuccessful, (c) *powerless*—*powerful*, (d) *important*—unimportant, (e) *weak*—*strong*, (f) *rich*—poor, (g) *despicable*—*respectable*, (h) *unpopular*—*popular*, (i) *influential*—uninfluential, and (j) *unprofitable*—*profitable*.

C. RESULTS AND DISCUSSION

The medians of the subjects' judgements were calculated separately for every occupation on the 10 adjective pairs inside each one of the three groups

³ The more positive adjective pair is printed in italics.

tested. The rank order of the 20 occupations was established on each adjective pair separately. This was carried out in such a way that the median score of the occupation closest to the more positive adjective of a pair was assigned the rank of 1, and the median score furthest the rank of 20.

In order to see whether the groups had ranked the 20 jobs similarly on all 10 adjective pairs, the Coefficient of Concordance (18) was calculated for each group separately. Among the Afrikaans-speaking White groups this

TABLE 1
RANK ORDER OF OCCUPATIONS

Occupation	White Afrikaans- speaking subjects	White English- speaking subjects	Coloured Afrikaans- speaking subjects
1. Teacher	15	10	8
2. Librarian	13	16	15
3. Bookkeeper	16	12	12
4. Musician	11	5 5	3
5. Engineer	5	3	6
6. Businessman	2 5	2	5
7. Psychologist	9	4	7
8. Nurse	8	5 5	2
9. Journalist	10	13	17
10. Clergyman	4	11	4
11. Actor	7	8	11
12. Shopowner	13	15	10
13. Carpenter	18	18	14
14. Policeman	6	9	13
15. Typist	17	17	16
16. Medical doctor	1	1	1
17. Politician	13	14	19
18. Porter	20	20	20
19. Farmer	2 5	7	9
20. Postman	19	19	18

amounted to .90, whereas it was .54 in the case of the English-speaking Whites, and .52 in the case of the Coloureds. All results differed significantly from zero at the .001 level. It is thus clear that the extent of agreement as regards judging the 20 concepts is much higher inside the Afrikaans group than inside the other two. This is in accordance with other results, such as the attitudes toward other ethnic groups, where the Afrikaners generally showed a far higher degree of homogeneity in their judgements than any other group tested in South Africa (11, 16).

Furthermore, Slabbert (20) had found that a considerable amount of Afrikaans subjects tested had the tendency to state that their occupational choice had been motivated by the idea of service to their group or country, or

the feeling that they had had a "calling" from God. These reasons were far less prevalent among the other groups in South Africa. Thus the homogeneity in the Afrikaners' judgements of jobs might be due to a relatively strong group loyalty and strong religious belief. The other two groups did, however, also show a highly significant degree of consensus as regards the rankings of occupations over the 10 adjective pairs. These findings to some extent corroborate Steffre's results (21) that the hierarchical order of occupations does not change considerably when different evaluation criteria are used.

The ranks obtained in the case of each occupation which indicate its relative position on every one of the 10 adjective pairs were subsequently summed, and a global ranking of occupations obtained by assigning the rank of 1 to the smallest sum and the rank of 20 to the largest. Spearman's rank order correlation was calculated between the rank orders of the three groups. Between the White Afrikaans- and English-speaking groups it amounted to .84; between the former and the Coloureds, .70; and between the English-speaking Whites and the Coloureds, .84. All coefficients differ significantly from zero at the .01 level.

It may therefore be concluded that there is a high similarity between the subjects belonging to the three groups as regards their ranking of occupations. This corresponds to the findings of previously mentioned investigators that evaluations of occupations by means of ranking tended to be highly similar in different cultures and nations.

But a more detailed analysis of the rank orders, especially those of the Afrikaans and the Coloured groups, shows some remarkable differences in the rankings of a few occupations. For example, the three jobs which deal with politics in some way, such as "the politician," "the journalist," and "the policeman," were all rated less favourably by the Coloured subjects than by the Afrikaners, whereas the English-speaking Whites occupied a position between the two. This result can be explained by the fact that the Coloured group is, on the whole, opposed to the discriminatory government policy in which they have no direct say. This policy is, on the other hand, strongly supported by the Afrikaners, who also favor the jobs mentioned above. Furthermore, the results obtained by North and Hatt (14) were supported insofar as the rankings of pronounced lower-middle- and middle-class jobs (e.g., "the carpenter," "the shopowner," "the typist," "the bookkeeper," and "the teacher") were evaluated more favorably by the Coloureds than by any one of the White groups. It can thus be concluded that, in spite of strong agreement as regards overall ranking of occupations, the restriction of occupational

choice seems to influence some jobs in the preference pattern of the Coloured group.

In order to establish the extent of the factorial structure of occupational stereotypes, the product-moment correlation was calculated between the occupations over all subjects and adjective pairs for each of the three groups separately. Factor analyses were carried out according to Thurstone's centroid method, and the factors extracted were rotated according to the Normalized Varimax Method (9). In all groups it was possible to extract three factors. In order to establish the degree of similarity between them, similarity coefficients were calculated according to a formula proposed by Eyferth and Sixtl (1). The similarity coefficients obtained were as follows: (a) between Afrikaans- and English-speaking Whites, .94; (b) between Afrikaans-speaking Whites and Coloureds, .84; and (c) between English-speaking Whites and Coloureds, .87. Since the similarity coefficient can be interpreted in the same way as a correlation coefficient, it is evident that the three factorial structures are very similar. Here again the greatest similarity exists between the Afrikaans-speaking and the English-speaking groups. A comparison of the three groups furthermore shows that the first, second, and third factors in each group correspond to the same factors in the other groups.

The first factor shows high loadings on upper-middle-class occupations, such as "the doctor," "the clergyman," "the nurse," "the psychologist," "the businessman," and "the teacher." The second factor is loaded highly on more middle- and lower-middle-class jobs, such as "the shopowner," "the carpenter," and "the farmer," whereas the third factor obtained high loadings in all three groups on lower-class jobs, such as "the porter," and "the postman."

In spite of these similarities there are some differences between the groups as regards certain jobs on some factors, such as "the musician," which tended to be rated as being an upper-class job by the Coloured subjects, whereas in the case of the White groups this occupation had almost equal loadings on the first and the second factor. The same tendency is noticeable in the case of "the librarian," whereas "the policeman" was evaluated more favorably by the Whites than by the Coloureds and is thus better represented on the first factor than is the case in the Coloured group. These tendencies could be expected in view of the foregoing discussion about the political situation in South Africa.

Furthermore, the findings of Grunes (4) are supported insofar as the Coloured subjects seemed to distinguish less than the Whites between lower-class jobs and all others, since all occupations had positive loadings (however

small) on the third factor, whereas this was not the case with the White groups.

It can be concluded that there is a high degree of similarity between the three cultural groups as regards the evaluation of occupations. This is in line with all other investigations mentioned previously, and seems to be due to the increasingly all-pervading influence of Western cultural norms on all countries tested, irrespective of their industrialization level.

When they do occur, differences between Whites on the one hand and Coloureds on the other in South Africa can be explained by the special circumstances under which the latter have always been forced to live, which have prevented them from having an unfettered occupational choice. They therefore tended to be realistic and valued attainable middle-class occupations; on the other hand, they tended to have less regard than the Whites for jobs, such as journalist, policeman, and politician, which could bring them into conflict situations with the White government.

D. SUMMARY

A comparative study between White Afrikaans-speaking, White English-speaking, as well as Coloured Afrikaans-speaking pupils in South Africa was undertaken to assess their stereotypes of 20 occupations which had to be judged by means of the Semantic Differential technique.

The results support findings made in other countries that the hierarchical order of occupational rankings tends to be similar in different cultural groups. This could be due to the strong influence of Western culture and its norms. The differences found between Coloureds and Whites were mainly due to the prevailing political system in South Africa, which separates the two groups as much as possible. It was furthermore established that the factorial structure of occupational stereotypes showed a large measure of agreement between the three groups; the factors were labeled "upper class," "middle class," and "lower-middle class."

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CROSS-CULTURAL ACTION RESEARCH: SOME LIMITATIONS, ADVANTAGES, AND PROBLEMS*

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A INTRODUCTION

In referring to cross-cultural action Foster says:

. . . One of the most serious shortcomings of evaluation work is that almost no comparative, cross-cultural analytical work has been undertaken. A wealth of experience lies buried in official reports and hidden in the minds of workers who have neither time nor the training to write up their knowledge for the use of others. It sometimes seems as if the sociocultural dimension of planned change must be discovered, and its rules worked out independently, in every new project. There is very little mechanism to make available to new personnel the accumulated wisdom on earlier programs (4, pp. 238-239).

Let us, then, exhume some "experience," and expose what is in the mind of one who has had some experience in a cross-cultural action program. Particularly, let us discuss some limitations and advantages of cross-cultural action programs as a setting for cross-cultural research. Some problems that one faces while engaged in such programs will be mentioned. What is to be said is an attempt to obviate some "shortcomings" in the "evaluation" of "cross-cultural analytical work." The experience and insights reported here were gained during work on a National Institute for Mental Health supported demonstration and research project.¹

The writer was field director of this cross-cultural action program. One aim of the staff was to persuade selected alcoholic Indians to abandon drinking completely. Another aim was to use the treatment setting to understand more about personality, alcoholism, and two Indian cultures: Navajo and Zuni. This project is an example of some advantages, some limitations, and some problems that arise in action research. Here, then, is a description of some difficulties in the use of applied psychology to change individual members of

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another "culture" and some limitations and advantages in the use of this action setting for ethnopsychological research.

B. LIMITATIONS

1. *The Clients Selected for Treatment Limit the Population Observed*

The research design, the types and categories of people observed, and the situations under which they are observed all may be restricted by the purpose of the action program.

During the treatment of alcoholic Indians, the population treated and, necessarily, the population studied was limited by the presence of a drinking problem in all the clients. Alcoholics may not be representative personalities in any culture. In almost all cultures, drinking is usually considered more suitable for men than for women (8, p. 282), and the population in this study is loaded with males.

Since only those Indians who had been arrested at least 10 times were selected for treatment, the sample was further skewed from the normal population. The fact that their drinking led to multiple arrests may result in the group's being unrepresentative of even the heavy drinking Navajo population.

2. *The Context of the Contact May Limit the Relationship and Personality Dimensions Observed*

Members of the group studied were initially approached in jail by the treatment-research staff; they were interviewed and tested, also, initially in jail, the hospital, or the project office. Later they most frequently received their Antabuse medication and engaged in interviews and consultations in the project office. Thus, they were usually observed in environments created by a "foreign" culture.

Contacts made in these contexts may not have elicited responses for study that are thoroughly representative of Navajo behavior. The nature of the project created contexts and relationships that run "directly counter to . . . good results in that they fail at times as necessitated by the primary aim of the program to tailor the procedures to the characteristics of the subject and his culture" (6, p. 303).

3. *The Role of the Professional Worker and His Role as Perceived by the Client May Limit the Data Emitted*

The actual role and the perceived role of the action worker may limit what cultural and personality data the subject, client, or informant may relate. In

the alcoholic treatment program one of the workers was a probation officer-counselor. Even though he was the only Navajo professional on the staff, the information that he gathered from the clients may have been manipulated or censored for their protection. Part of their reticence may have resulted from realistic perception of a probation officer's authority role. Yet, other members of the staff may also have been inappropriately perceived as law enforcement officials. Perceiving the observer as an official, a missionary, or a helping professional, whether appropriate or inappropriate, would influence the client's responses. The perceived role of the professional may limit the nature, the extent, and the depth of information gathered from clients.

4. The Program Aims May Limit Effective Control of Variables

Action programs may limit the control of variables because such controls are inconsistent with the goals of the action program. A treatment program requires the recruiting of clients. To recruit clients, the treatment program may need support of the community from which the treated group comes and the help of the community that surrounds the group. Sometimes this participation and support depends upon the release of information about the program to these cooperating groups. This information release makes impossible some kinds of social manipulation.

In the Indian Problem Drinker Project, continuation of the program depended on the support of the Indian and the non-Indian communities. In order to maintain this support, limitations were placed on which subjects were treated (the experimental group) and which subjects not treated (the control group). Manipulations were limited further by the "goldfish bowl" nature of the operations, among which were frequent demands from the different communities for information about the progress of the Project.

Since the primary purpose of the Project was treatment of Indian problem drinkers and since the primary research aim was to study the effectiveness of this treatment program, the ethnopsychological observations and research were restricted by the demands of the treatment priority. The treatment orientation made the ethical selection of a placebo control group and a misled or falsely promised control group unfeasible.

Furthermore, in the selection of clients and in the instituting of social controls that were essential to the treatment program, especially needed were the committed cooperation of the Public Health Service physicians, the police, and the courts. There was also the need for some degree of cooperation from tribal leaders and tribal authorities to facilitate the operation of the program. The treatment team had to meet some of the conditions and the demands of

members of cooperating groups. These demands included, in some instances, specifications as to who was or was not to receive treatment, when he was to start on the program, when he was to be released, and whether he was immune or exposed to the consequences of breaking the probation that was a requirement for his inclusion in the treatment group.

Losing control of essential variables, such as these, limits the nature of conclusions about the effectiveness of the treatment program, and limits the kind of generalizations about the nature of the culture and the personality of the persons treated.

5. *The Selection of Service Trained Professionals May Limit Effective Cross-Cultural Research*

Because of the vocational specializations needed in action programs, some treatment personnel may be untrained in the study of ethnic groups. For example, the Indian Problem Drinker Program included, in addition to an anthropologist, the participation of physicians, a psychiatrist, psychologists, nurses, a social worker, and a probation officer. To demand sophistication in ethnopsychology as a requirement for hiring all members of a treatment staff would make recruitment impossible. Yet, this lack of sophistication limits the nature of the culture and the personality observations of the staff.

C. ADVANTAGES

1. *The Aims and Methods of the Action Program May Reveal New Dimensions of Culture and Personality*

Action programs determine the dimensions or aspects of personality studied. While this feature of action research, as has been mentioned, may be limiting, it may open up *new* dimensions of culture and personality.

For example, Foster (4, pp. 207-208) reports on the work of Isabel Kelly in a rural health project in Mexico. In attempting to "find a solution to housing problems," she was forced to gather ethnological data. The data were not available previously because no one had made a pertinent study in the area.

Another example can be taken from the Indian Problem Drinker Project. In this situation, when counseling an Indian problem drinker, the action worker discovered that the ethical system of this Navajo was dominated not by the traditional concepts of his cultural group, but by the concept of a punitive and threatening Christian "Supreme Being."

Information of these kinds may appear in observation settings, but action

programs can force the eliciting of otherwise neglected questions and otherwise unprovoked responses. Action research can generate information and hypotheses that might not have come into the purview of the nonaction motivated observer.

2. *An Action Program Offers the Opportunity to Study People
While They Work with the Observer*

A treatment program offers the opportunity to study people who are engaged with the action worker in a problem solution. Personality "passively" observed is something different from personality resisting change or personality committed to bringing about change. Opportunities for the action worker to observe the problem drinkers while helping them overcome the alcohol problem are obvious. Also, action programs may include in the professional, semi-professional, and less skilled staff people who belong to the same ethnic group as those treated. Working with Indian peers and jointly treating Indian problem drinkers offered the Indian Problem Drinker Treatment staff an opportunity to observe members of an ethnic group at close range and in a context quite different from that of traditional ethnological studies. The same principle of working toward a common social goal applied to the staff contacts with Indian tribal employees and officials whose help was solicited to make the program effective.

3. *Action Programs Offer the Opportunity to Observe People
in an Intense Relationship and at a "Deep" Level*

Related to the new dimensions and to the participant features of cross-cultural action programs is another advantage: action programs offer the professional the opportunity to observe the members of an ethnic group intensively and in "depth." People who are driven to change by anxiety and physical discomfort are often motivated to reveal conflicts that lie at the core of personality. A few Indian problem drinkers related with the professionals at a depth of affect comparable to middle-class, non-Indian clients. The professional may get to know his Indian clients well, perhaps as well as he would a client in private psychotherapy.

Some treated Indian problem drinkers consulted the treatment staff more frequently than most non-Indian middle-class clients consult their therapists. Incidentally, these consultations produced the impression that the basic inner conflicts of the intensely treated Indians were often similar to the basic conflicts of non-Indian middle-class clients.

4. *An Action Program Can Offer Copious "Informants"*

Action programs provide a plentiful supply of informants. In the treating of Indian problem drinkers, the staff never experienced a paucity of informants. The action workers had an obvious purpose in interviewing them. The project had built-in rewards in exchange for information. These rewards included vocational, marital, and psychological consultation; staff approval and friendship; a pill to inhibit drinking; help in overcoming alcoholic patterns; avoidance of jail; and, now and then, a job referral. Informants were available, also, in the form of staff personnel. Except for these, the staff did not need to pay informants, and if the rewards mentioned were not effective in making contact with informants (clients), meaningful negative incentives were available. The staff could use judicial and police persuasion.

D. PROBLEMS OF CROSS-CULTURAL ACTION PROGRAMS

1. *Stereotyping Can Interfere with Treatment and Observation*

At present, the word "stereotype" is so much on the lips of the educated that there is little need to deal with it in detail here. However, because of his involvement with people, the action worker may unwittingly betray his prejudices more readily than a process observer. Relating with people in treatment or in social action generates feelings and expressions that would remain hidden or disguised in ordinary observation. For example, in relating to Navajos, one professional addressed them by their first names or referred to these mature men as "my boys." There may be in this manner of address condescension which carries a connotation that the client is childlike or inferior.

Despite one's resistance to these and other stereotypes of Navajos—such as unreliability, lack of attention to time, drunkenness, and inability or unwillingness to complete a careful piece of work—the stereotype may be so prevalent in both the non-Indian and Indian communities that it becomes, to a degree and within limits, the reality. The stereotype—not only of the Indian, but of the professional worker—presents problems. The Indian may see the professional as one of "those white men who took everything away from us," or he may see him as an extension of police power or as a missionary.

Likewise, some members of both ethnic groups acquire stereotypes toward the group of which they are a member. For example, one anthropologically trained professional worker in the Alcoholic Treatment Program for Navajo Problem Drinkers had a stereotype of his colleagues as people "with middle-class values" who were "interfering with a well-established Navajo pattern of drinking." Similarly, he apparently perceived all "managers," including

the supervisory staff members, as representatives of the oppressors and exploiters of workers and ethnic minorities. He obviously identified with these exploited workers and Indians in his "struggle against exploitation." A frequent response of Indian problem drinkers to the question, "Why do you get drunk so often?" is, "I'm an Indian!" When this question is pursued, it becomes obvious that the alcoholic Indian is a victim of his own "drunken Indian" stereotype. Stereotyping, then, not only applies to one's perception of people in the "other" groups, but also to one's perception of people in one's "own" group.

2. Ethnocentric Reaction-Formation May Interfere with Treatment and Observation

Stereotyping is one expression of ethnocentrism; and, certainly, ethnocentrism can interfere with an understanding of "one's own" and a "foreign" culture. Stereotyping and ethnocentrism are recognized by the sophisticate as expressions of naiveté; and, certainly, both interfere with any kind of cross-cultural action or ethnological observation. However, an overreaction to ethnocentrism, which may be called ethnocentric reaction-formation, can also interfere with effective action or study.

Whether deep antagonism toward and rejection of the society in which one lives is as distorted an attitude as chauvinism may be worth debating; but, certainly, ethnocentric reaction-formation can interfere with one's working effectively as a part of a team that is dedicated to bringing about cross-cultural change. When the antagonism toward a society reaches the dimension of fanatical and categorical rejection of it and members of the society, neither the people nor the society are understood. This is equally as true of the society in which a person was reared as it is of a society foreign to him. For example, one project professional felt that Navajos "know more than we do; they have been here many more years." This worker saw Navajos as a "happy, relaxed people," and held the conviction that Navajo parents should teach their children the Navajo language. Another staff member also believed that Navajos would have fared well if "we" had just left them alone.

One manifestation of ethnocentric reaction-formation is the "noble savage" concept; another is the need for artificial preservation of esoteric societies, the maintaining of "human zoos" for the study of ethnology. Another manifestation of ethnocentric reaction-formation is a preoccupation with "culture" and "society" to the exclusion of individual human needs.

For effective cross-cultural observation and action, as well as for personal adaptation, one needs an understanding of his own, as well as other, cultures.

This understanding demands a degree of emancipation from one's own culture without total rebellion against it. It further demands a discarding of cultural romanticism.

3. *The Concept of Cultural Relativism Presents Practical Problems*

In any context the issue arises: When is a given way of behaving accurately considered problem behavior? Not all members of our research-treatment staff were convinced prior to commencing work on the project that any Navajos were "really alcoholic" nor were they convinced that the Navajo rate of drinking and arrest was indicative of Navajo drinking problems. Some staff members had to see the arrest records of the Gallup Police Department and read a report by Stewart on Indian arrests taken from the United States Census (11) and other cross-cultural studies on alcoholism before they were convinced that Indian drunkenness was not just an historical stereotype. Further exploring of the literature emphasizes the widespread nature of Indian alcoholism and the wide cultural diversity of drinking habits (1, 2, 3, 5, 7, 10, 12, 13). Even though some staff members granted that Indians drink a great deal and get arrested often for drunkenness, they wondered whether these were problems for Navajos or projected problems of middle-class Americans and practical problems for the local police.

Other attitudes that can find support in the concept of cultural relativism can also block staff motivation. The attitude expressed by the question, "Do we have a right to impose middle-class concepts of sobriety on Indians who have their own well-developed cultural drinking pattern?" is worth comment. While there are some misconceptions in the question about "patterns of drinking," it raises the issue of "moral rights" to institute change in people or in their society. Thus, how people initiating the treatment process perceive their own society determines the treatment process, and influences their observations of the "other" culture. The way the action worker perceives his own effect on the "other" culture, also, can determine the responses and patterns of behavior invoked in his subjects, and, consequently, influences the kind of personality and cultural data elicited for his observation.

Cultural relativism may be an effective nonjudgmental value orientation for ethnological process observation. However, carried to its ultimate, it is a concept inconsistent with fostered social change. It can immobilize one who is trying to bring about cultural change or change in an individual in a foreign culture. One who doubts the morality of a given effort at individual or social change and yet accepts an assignment to a project devoted to such change will

produce one or all of the following reactions: experience internal conflict, antagonize his colleagues, or disrupt the program.

If one is going to accept assignments to carry out cultural change or consult people who, according to the definitions of a society, have individual or social problems, he needs a value system other than cultural relativism.

Pure science is nonjudgmental, amoral; applied science is judgmental, moral. Thus, when one is gathering usual empirical facts, a nonjudgmental, cultural-relativist attitude is useful, but when one is applying scientific principles to individual and to social change, certain judgmental principles are essential. For determination of such principles, the code of ethics of the Society for Applied Anthropology (9) has limited value.

E. SUMMARY

A Navajo Problem Drinker Treatment Program indicates that cross-cultural action research has (a) limitations—incomplete sample of people and personality dimensions, role and perceived role of worker, aims inconsistent with control of variables, service-training of workers; (b) advantages—reveals new culture and personality dimensions, people studied while served in an intense relationship at a “deep level,” copious “informants”; and (c) problems—concept of “cultural relativism,” stereotyping, and ethnocentric reaction-formation interfere with treatment and observation.

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BIRTH ORDER OF VOLUNTEERS FOR SENSORY RESTRICTION RESEARCH*

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A. INTRODUCTION

A recent report by Suedfeld (3) suggested that firstborns may be over-represented among volunteers for sensory isolation experiments. The recruitment of the paid male Ss in Suedfeld's study took place through notices placed on bulletin boards at several New Jersey colleges. Subsequent telephone contacts informed the potential Ss that the experiment would require total isolation in a dark and soundproof chamber for a period of up to 24 hours.

Of the 29 volunteers who reported for confinement, 79 per cent were firstborns. Suedfeld compared this result with that of Capra and Dittes (1), who found that, of 29 male Ss who volunteered for a group experiment, 76 per cent were firstborns. This proportion was substantially greater ($p = .10$) than the 61 per cent of firstborns in the Yale freshman class from which Capra and Dittes' sample was drawn.

It was not possible, however, to obtain data on the proportion of firstborns among the population from which Suedfeld's 29 volunteers were drawn: the students at the several New Jersey colleges who were exposed to the bulletin board announcements. Thus, the possibility may exist that the proportion of firstborns in Suedfeld's sample may not be significantly greater than the proportion of firstborns in the population (all those who saw the notices). As Warren (5) noted, there is overwhelming evidence indicating that firstborns of both sexes attend college in relatively greater numbers than later-borns.

B. PROCEDURE

The present study was an attempt to determine the incidence of firstborns among female volunteers and nonvolunteers for a sensory deprivation experiment. The study involved 59 female, college sophomores enrolled in two sections of introductory psychology at Mary Washington College of the University of Virginia. Order-of-birth information was obtained from these

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classes for purposes unrelated to the present study. One month later, Ss were told that some studies on sensory deprivation were to be undertaken at the college. The conditions of confinement (darkness, silence, remaining still and quiet, etc.) were explained to them, and volunteers were called for to serve for three hours in isolation. They were told they would be reimbursed at the rate of \$1.00 an hour. Ss indicated whether or not they would volunteer, in writing, on individual slips of paper.

The proportion of firstborns in the population from which this sample of volunteers (and nonvolunteers) was drawn was determined by obtaining order-of-birth data from all 13 sections of introductory psychology, a total of 283 students. This represents a 15 per cent sample of the total college enrollment. The proportion of firstborns found in this population was 58 per cent.

C. RESULTS

Of the 59 potential Ss, 81 per cent (48 Ss) volunteered to serve in the sensory isolation study. Of the volunteers, 58 per cent were firstborns. This is a substantially smaller proportion of firstborns than the 79 per cent found by Suedfeld, but is exactly the same proportion as found in the population from which the volunteers were drawn. Thus, firstborns were definitely not overrepresented among the volunteer Ss.

A second finding was that 82 per cent of those who chose not to volunteer were firstborns. This does not differ significantly from the proportion of firstborns among the volunteers (the chi square technique with Yates' correction for continuity was used). This finding is supported by other studies that compare birth order of volunteers *versus* nonvolunteers for (a) male Ss in 96 hours of sensory deprivation (2), (b) male and female Ss in an isolation-study of one hour (6), and (c) male and female Ss in "an experiment involving a subject's performance on a task while alone" (4, p. 311). None of these studies found significant differences between volunteers and nonvolunteers as a function of birth order.

If any relationship does exist between order of birth and volunteering for sensory isolation research, it has yet to be clearly established.

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SOME EFFECTS OF RELEVANT STORIES PORTRAYING
DANGER ON RETENTION OF INFORMATION ASSOCIATED
WITH THE STORIES⁺ ¹

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A. INTRODUCTION

The scare technique is often used as a motivating appeal in mass communications dealing with public health recommendations. The principle is to associate either an undesired practice with a highly adverse outcome—e.g., smoking with lung cancer—or a desirable practice with elimination of or avoidance of the adverse consequence—e.g., regular brushing with cavity-free teeth. Typically the projected consequence of nonconformity to the practice is spelled out in vivid, threatening detail. The efficiency of this technique in changing opinion or in inspiring conformity to recommendations has been seriously challenged by a series of related experiments (1, 2, 5). These studies suggest that a strong fear appeal is inadequate for its purpose by comparison with an appeal wherein the degree of fear-arousing material is kept minimal.²

A question raised by these findings concerns how the opinion change is mediated. How can the failure of the strong fear appeal be accounted for when subjects exposed to the strong appeal express more worry and concern over the communications than do those exposed to a milder appeal? Janis and Terwilliger (5) have suggested that the stronger the fear aroused by a persuasive communication, the more it is likely to interfere with the respondent's attentiveness, concentration, and thus his retention of the material. This being so, he is less able to recall the appropriate recommendations at a

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² At least one study (8) supports the strong threat principle of motivation. Snider reports more change under high threat than under low threat, in a study of the attitudes of approximately 1500 high school students toward smoking and lung cancer.

later time when either symbolic or real action becomes necessary. Further, the respondent may actually be motivated to avoid recollections associated with the communication (5, p. 409). However, if differences in degree of opinion change are attributable to interferences and psychological resistance to the strong threat communication, then differences in retention of the content should also be observable. In none of the studies where retention has been measured have such differences been found.

In the original Janis and Feshbach study (2), no reliable differences were found between the three experimental groups on the amount of information that was acquired. Also, in Goldstein's study (1) there were no differences in recall of lecture content between Ss who had accepted and Ss who did not accept the recommendations given with the fear appeal. But Janis and Milholland (4), with what they considered a more sensitive measure of learning efficiency (verbatim recall), report selective differences in the type of content recalled. Although overall performances were about equivalent for the two groups, Ss given the strong appeal reproduced items having to do with threatening consequences more accurately than did those given the mild appeal. On the other hand, those in the mild appeal group were superior on items that explained the *causes* of the threat. A reasonable interpretation of this finding is that the mild appeal is more likely to contribute to recall of information on how to avoid the threat. Ss presented with the strong fear appeal seem to focus mainly on the more frightening, less constructive aspects of the appeal.

The present experiment tested the proposition of differential retention, according to level of danger portrayed, in a natural learning setting.

Two major working hypotheses were formulated. The first hypothesis, in line with the earlier findings, states that the retention of Ss perceiving low danger is better than that of Ss perceiving high danger. The second hypothesis states that Ss who read of possible danger following learning of recommendations will retain the information better than Ss who read dangerous situations previous to recommendations. Hypothesis two assumes all levels of danger portrayed in a story incite a certain degree of fear, and that an individual is better able to cope with the fear stimulus after rather than before the learning and symbolic rehearsal of the communicator's recommendations.

The data of the present study were also used in an additional test of three hypotheses made by Janis and Feshbach (3). In their examination of the reactions of high and low anxiety Ss to strong and mild fear appeals, they predict and give evidence for an interaction between the two variables. The hypotheses, confirmed by their data, are (a) high anxiety Ss are less influenced by a strong fear appeal than are low anxiety Ss, (b) high anxiety Ss are more

influenced by a mild appeal than are low anxiety Ss, and (c) differences between high and low anxiety Ss are greater in the case of strong than in the case of minimal appeal.

B. METHOD

1. *Subjects*

Ss were ninth grade students enrolled in the health classes of a large suburban high school. The modal age was 14 years. Altogether 133 males and 133 females participated in at least one of the posttest phases of the study.

2. *Experimental Materials*

The carrier that included both the stories and the corresponding recommendations was a set of four programmed manuals. The manuals contained 14 chapters of specific information on safe driving strategies, programmed in linear, constructed-response form. Manuals I and II consisted of seven chapters dealing with *routine* driving recommendations: e.g., for making turns, for parking, and for keeping the vehicle in safe operating condition. Manuals III and IV contained another seven chapters having to do with *emergency* driving procedures: e.g., for handling blowouts, loss of brakes, and skids.

Six stories ("case studies") were written to correspond to the content of three of the routine-material chapters and three of the emergency-material chapters. A story insert consisted of a story stem and one of three variable endings, followed by several programmed frames which required the subject to respond to the essence of the story, and to its ending. The story inserts were constructed so that they could appropriately either precede or follow the matching chapter on driving tactics.

A large pool of multiple choice items was written to cover all the information presented in the programmed manuals.³ Twenty fairly easy items—covering material likely to be known prior to entering a driver instruction course—were selected to comprise the Driver Knowledge Test (DKT). Either 15 or 16 items were selected for each of the chapters to be associated with a story. This made a total of 93 items for the relevant portion of the retention test. Fifty-two irrelevant items were taken from the information in the filler chapters to bring the total to 145 items that comprised the final retention test. Of the 93 relevant items, 46 pertain to routine driving information, 47 to emergency driving information.

³ Dr. Thelma Hunt, of The George Washington University, did a considerable amount of the item writing and item evaluation for this study.

A series of eight semantic differential scales [see Osgood *et al.* (7)] were devised to evaluate the effectiveness of differences between the three kinds of story endings. For each of the six stories the stem only was presented and followed by the seven-point scales, in randomized order. The polar adjectives for the scales were: Calm-Excited, Wonderful-Terrible, Careful-Reckless, Good-Bad, Light-Heavy, Real-Phony, Nice-Awful, and Dull-Interesting.

Finally, the Taylor Manifest Anxiety Test (9) was used as a control measure to determine whether manifest anxiety interacted with level of danger described in the stories.

3. *Experimental Design*

The fundamental design consisted of variations on intensity of the story endings and variations on their placement in relation to the informational chapters. A *low* intensity story ending was one in which nothing of any material consequence happened to the motorist depicted in the episode. A *moderate* intensity story insert had an outcome in which there was an accident with property damage or an arrest, but no personal injury. The *high* intensity endings described the severest consequences for failure to conform to safe driving procedures—here injury and death were described in gory specificity. These stories were always followed or preceded by the appropriate safe driving strategies: i.e., the recommendations on what to do or how to avoid the situation described in the story.

There were five intensity conditions and three orders of placement. The intensity conditions were (a) *Control*—Ss assigned to this condition had no story inserts in their manuals; (b) *Low Intensity*—all six story inserts had low intensity endings; (c) *Moderate Intensity*—all six stories had moderate intensity endings; (d) *High Intensity*—all six stories had high intensity endings; and (e) *Mixed Intensity*—Ss in this condition were assigned manuals containing two each of the low, moderate, and high intensity endings arranged in random sequences.

The three orders of placement were (a) *All-After*—all stories followed the informational chapters; (b) *All-Before*—all story inserts preceded the informational chapters; and (c) *Mixed-Order*—Ss who were assigned this order received one of three suborders: AAA BBB, BBB AAA, or ABA BAB (the letters designating whether and which of the stories came “After” or “Before” the corresponding instruction).

4. *Procedure*

The sample was made up of four boys’ and four girls’ health classes, which were seen by the experimenters on nine (class-contact) days. On day one the

Taylor Manifest Anxiety Test (TMA) and the Driver Knowledge Test (DKT) were administered, and then a set of four manuals was assigned at random to each subject. Because the combinations of intensity and order indicated by the 5×3 design were contained within the sets of manuals, random assignation of the manual sets to individuals was tantamount to random assignation of individuals to cells in the design. Students worked through the programmed manuals on days two through five. *Ss* averaged one 55-minute period to complete each manual, but there was sufficient time on the fifth day to administer the semantic differential scales to *Ss* who had completed manual sets containing stories. On the sixth and seventh experimental days (Monday and Tuesday following the intervening weekend) *Ss* were given the portion of the retention test having to do with routine driving procedures (as presented in Manuals I and II), and the portion of the test of retention of emergency driving tactics (as in Manuals III and IV). Approximately one month later, on days eight and nine, *Ss* were given the two sections of the retention test again.

C. RESULTS

The DKT scores provided a measure of how much driving knowledge *Ss* brought to the experimental situation. An analysis of the DKT scores revealed males superior to females by a highly significant margin ($p < .001$). However, neither the between cells *F* ratio for males nor females approached statistical significance, indicating the experimental subgroups were initially comparable, within sexes. But because of the sex difference in knowledge, all subsequent data were analyzed separately by sex.

1. *Ratings of the Story Inserts*

Ss in the Low, Moderate, and High Intensity groups made ratings on the eight semantic differential scales for each of the six stories, or "case studies." For every scale or dimension of affect (e.g., Wonderful-Terrible), *Ss*' ratings were summed across stories. For example, if *S* rated all stories at the extreme, "Terrible," end of the seven-point scale he was given a total of 42 ($= 6 \times 7$). Thus a score of 6 ($= 6 \times 1$) meant he had rated all stories at the extreme, "Wonderful," end of the scale, and a score of 24 ($= 6 \times 4$) represents neutral affect on that dimension.

Since the ratings were made by *Ss* who received only one level of stimulation, they are absolute judgments in the sense that *Ss* had nothing against which to contrast them. Also, in making the ratings *Ss* were presented with only the story stems, not the emotionally-toned endings; so any differences in ratings are a reflection of immediate memory for the endings.

There are highly significant differences between the High *versus* Moderate and the High *versus* Low groups. In both sets of comparisons the differences are in the expected direction. Ss in the High Intensity groups consistently rate closer to the "Terrible," "Bad," "Awful," and "Heavy" ends of the scales (using the .05 level of significance) than do Ss in either the Moderate or Low Intensity groups. This suggests greater negative affect for the High Intensity group, and indicates the intended experimental manipulation was accomplished in the case of High Intensity stories. Differences are greater for females than for males on the four above-mentioned scales; the implication is that the experimental manipulation for the High Intensity condition was more successful with females.

There were no reliable differences between High *versus* Moderate or Low Intensity groups on the "Phony-Real" or the "Dull-Interesting" scales, with the exception that females rated High Intensity endings as more interesting than Moderate Intensity endings. Insofar as theoretical interpretation of findings is necessary, it is gratifying that High Intensity endings were seen as being as realistic or plausible as Low or Moderate Intensity endings, and about of equal interest.

According to these data, there is no significant difference between the class of endings called "Moderate" and that called "Low." Nor is the direction of the differences as expected. There is a consistent though statistically unsupported tendency for Moderate Intensity inserts to be rated less severe than Low Intensity inserts. The conclusion is that Low and Moderate Intensity forms must be considered equivalent. Both represent a mild form of danger portrayed compared to the reliably stronger High Intensity endings.

2. Retention of Information

The critical dependent measure was the number of correct responses achieved by Ss on the retention test. In considering the effects of the two main variables—i.e., *intensity* and *order* of stimulation—there were eight variations on retention data to be examined. These are represented by the two sexes responding to two types of content (routine = Rou, emergency = Emr) on the two occasions of testing for retention (Immediate = I, Delayed = II). Separate two-factor analyses of variance were computed for each of the eight sets of data, because of the desirability of analyzing sexes separately, and because both the content and time variations are nonindependent. The problem of unequal subclass replications was handled by using the Walker and Lev (10, p. 381) approximate solution. Analyses involved only relevant items.

Table 1 shows the summaries of the analyses of variance. There were sig-

nificant *order* effects for males, on both the immediate ($p < .05$) and delayed ($p < .01$) tests of retention for emergency driving recommendations. The effect appears stronger on the delayed test. There were no significant *order* effects for females, but female Ss did have a significant main effect for *inten-*

TABLE 1
ANALYSES OF VARIANCE OF CORRECT RESPONSES OF MALES AND FEMALES FOR ROUTINE AND EMERGENCY DRIVING INFORMATION, ON THE IMMEDIATE AND DELAYED OCCASIONS OF TESTING

Source	Males			Females		
	<i>df</i>	<i>Ms</i>	<i>F</i>	<i>df</i>	<i>Ms</i>	<i>F</i>
<i>Routine information, immediate test</i>						
Order (O)	2	3.40	1.41	2	.52	.21
Intensity (I)	4	1.98	.83	4	1.03	.38
O \times I	6	3.35	1.38	6	1.40	.56
Error—O	94	2.42		94	2.50	
Error—I	118	2.38		116	2.68	
<i>Routine information, delayed test</i>						
Order (O)	2	2.52	.77	2	8.60	2.84
Intensity (I)	4	6.99	1.89	4	5.40	1.72
O \times I	6	8.72	2.67***	6	1.20	.40
Error—O	89	3.27		90	3.03	
Error—I	113	3.70		114	3.14	
<i>Emergency information, immediate test</i>						
Order (O)	2	20.32	3.33 [†]	2	.65	.15
Intensity (I)	4	6.32	1.06	4	11.46	2.40
O \times I	6	2.40	.39	6	3.35	.76
Error—O	88	6.11		93	4.42	
Error—I	112	5.95		117	4.77	
<i>Emergency information, delayed test</i>						
Order (O)	2	24.16	5.37***	2	.68	.15
Intensity (I)	4	9.74	2.18	4	14.26	3.03** [†]
O \times I	6	4.89	1.09	6	3.46	.74
Error—O	87	4.50		83	4.66	
Error—I	111	4.46		107	4.70	

Note: There are separate error terms for Order and Intensity because the scores for the Control group (which had no story inserts) were excluded in the analysis of Order.

* $p < .05$.

** $p < .025$.

*** $p < .01$.

sity ($p < .025$). This was on the emergency driving portion of the delayed test. The corresponding *F* ratio for the immediate test was fairly large but nonsignificant at the .05 level.

Three kinds of interaction are suggested by these main effects: (a) a sex difference—an order effect for males only, and a statistically significant intensity effect for females only; (b) a content difference—all main effects appear

only on the emergency procedures portion of the final retention test; and (c) a time difference—the main variables appear to have greater influence on the delayed examination scores.

There were no statistical interactions between the order and intensity variables with the one exception of males, on the routine-procedures part of the delayed test. An examination of the cell means for that data reveals the interaction is chiefly attributable to the Mixed Intensity group. Within that group those receiving the Mixed Order had unusually low retention, whereas those

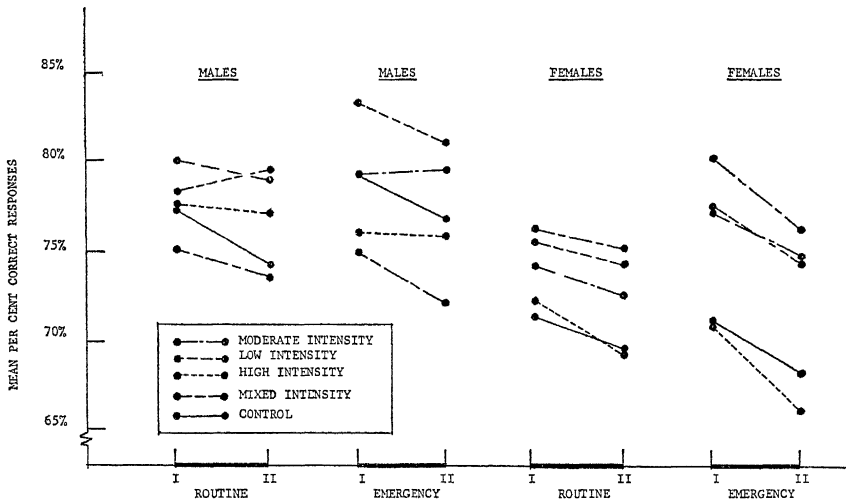


FIGURE 1
MEAN PER CENT CORRECT RESPONSES FOR ROUTINE AND EMERGENCY INFORMATION,
ON THE IMMEDIATE (I) AND DELAYED (II) TESTS, BY SEX

receiving the All-Before Order had unusually high retention, the reverse of the typical trend. A description of the more detailed analysis of these findings proceeds in light of the two hypotheses.

Figure 1 illustrates the effects the various intensity conditions had upon retention. There is noticeably greater differentiation among the intensity groups for the emergency than for the routine section of the retention test. Also, it appears that the pattern of effectiveness of the intensity conditions is similar for males and females. Retention is generally better under Low and Moderate Intensity conditions, poorer for the Control and High Intensity conditions, for both sexes. But there is a marked interaction for sex in the Mixed Intensity condition—for males it is the least effective condition, for females the most effective.

With reference to the first hypothesis that there is better retention under Low than under High Intensity stories, either the Low *versus* High Intensity or the Moderate *versus* High Intensity comparisons are appropriate for testing the hypothesis. (The verisimilitude of the Low and the Moderate Intensity conditions was indicated in the analysis of ratings of affect.) Both comparisons substantiate the hypothesis to some extent, *with the emergency-procedures content*. Low were superior to High Intensity stories on the delayed test for females ($p < .05$), and for sexes combined ($p < .10$).⁴ In addition, the Moderate Intensity was more effective than the High Intensity condition, again, on the delayed test for females ($p < .05$), and on the immediate and delayed tests for sexes combined ($p < .05$ in both instances).

The findings also indicate an *absolute* positive effect of the milder forms of story endings upon retention of the emergency driving recommendations. This is seen in the comparison of the Low and Moderate Intensity groups with the Control group. While High Intensity was comparable or slightly inferior to the Control condition, the Low and Moderate Intensity groups retained more information than did the Control Ss. The Low Intensity condition was more effective than the Control treatment for females ($p < .10$) on the delayed test. Similarly, Moderate Intensity treatment was more effective than the no-story Control condition for females ($p < .10$) and for sexes combined ($p < .10$) on the delayed test.

The second hypothesis was statistically verified for males on the emergency content section of the delayed test ($p < .05$). Although the Mixed Order was generally most effective for males, the All-After Order is superior to the All-Before, in line with the hypothesis.

3. *Hypotheses Pertaining to Manifest Anxiety*

To test Janis and Feshbach's three hypotheses (3) with the present retention data, partial correlational coefficients were computed. The coefficients reflect the relationship between Taylor Manifest Anxiety scores and final retention scores on the emergency content test, with prior driving knowledge (DKT scores) constant. As can be seen in Table 2, the implications of at least the first two hypotheses were supported for males but not for females. That is, for males in the Low Intensity condition, there is a positive relationship (.40) between manifest anxiety and retention, whereas under High Intensity that

⁴ Kramer's (6) modification of Duncan's multiple range test for means was used in the statistical comparisons because of the unequal n s in the samples. Because the adaptation of the multiple range test is especially conservative (more likely to lead to acceptance of the null hypothesis than the conventional test), $p < .10$ is used as a criterion of statistical reliance in reporting these comparisons.

relationship is slightly negative ($-.12$). For females there appears to be a reversal of this tendency. However, the hypotheses were not borne out statistically for either sex, since none of the *differences* between coefficients was significant.⁵

D. DISCUSSION

The two central hypotheses of this study were supported by the data in a somewhat restricted sense. The comparisons involved were reliable only in the analysis of the emergency-procedures type of content. It was anticipated that the emotionally toned inserts would more likely have observable effects in connection with the emergency driving material than with the recommen-

TABLE 2
PARTIAL CORRELATIONAL COEFFICIENTS SHOWING RELATIONSHIP BETWEEN TAYLOR
MANIFEST ANXIETY SCORES AND FINAL RETENTION SCORES FOR
EMERGENCY DRIVING INFORMATION

Subjects	Intensity group		
	Low	Moderate	High
Males			
<i>N</i>	25	24	27
<i>r</i>	.40*	.02	-.12
Females			
<i>N</i>	25	25	22
<i>r</i>	-.05	.30	.26

* Significant at $p < .05$.

dations for routine driving situations. Danger portrayed in "case studies" is more realistic in a learning context dealing with driving situations that are inherently dangerous. Moreover, the content used in previous fear appeal studies has been inherently threatening either because of personal-experiential associations (e.g., oral hygiene recommendations linked with painful dental experiences), or because a salient public health theme was treated (as in smoking and lung cancer communications). By contrast it can be assumed that the relatively bland topics in the routine driving procedures section (i.e., parking regulations, right-of-way rules, etc.) normally have few fearful associations.

The sex differences found in the present research are not easily explained,

⁵ As an additional test of the hypotheses, the groups in each of the cells in Table 2 were dichotomized on the basis of manifest anxiety scores. The differences between high and low anxiety groups were of the direction and magnitude indicated by the partial correlational coefficients in Table 2. A series of *t* tests revealed no confirmation of the hypotheses.

and none are reported in the previously cited literature. Although it is not unreasonable to suppose that females, manifesting more anxiety than males, have a lower threshold for fear stimuli, the anxiety data do not support this as an explanation for the sex difference in response to the stories. High anxiety females actually outperformed low anxiety females in the High Intensity condition. According to one of the hypotheses put forth by Janis and Feshbach (3), the reverse should occur if manifest anxiety is related to threshold of fear arousal, and given that strong fear arousal affects retention negatively.

In absence of support for the anxiety-threshold notion, a tenable explanation may have to do with driving aptitude and ability. If males feel they have a better understanding of and capability for emergency driving tactics, the recommendations presented in connection with the stories would likely be more reassuring to them. Elicited fear and the hypothetical defensive interferences might then be offset to some degree by their perceiving the recommendations as realistic ways of averting or coping with the potential threat. An extension of this thinking would help to explain the *order* effect occurring for males only. Thus, *if* the recommendations for emergency driving procedures are reassuring *only* for males, their order of placement in relation to the fear-arousing stories could matter *only* to males. This being so, the second hypothesis of this study might be modified accordingly: *for those to whom the recommendations are effective*, retention is better when threatening stimuli follow the learning of recommendations than when threatening stimuli precede the recommendations.

The pre- and postexperimental knowledge tests show males know more and retain more about driving techniques than do females, which gives some substance to the driver-aptitude explanation. Unfortunately this kind of sex difference was unanticipated, and there are no data that reveal the perceived adequacy of the recommendations.

The observed delayed effect of the independent variables on retention suggests the possibility that a concurrent process is occurring for motivation to accept an appeal, or to change an attitude. Present results show that most meaningful differences between experimental groups become more emphatic with passage of time, such that in certain instances significance levels were reached only after a month's delay. According to the study by Janis and Terwilliger (5), *Ss* begin resisting high-threat communications *while* the message is being read. Our findings of a delayed effect, however, imply *Ss* may become even more resistant with time, and that the differential influence of a strong *versus* mild threat may become even more pronounced in its effect on attitudes.

The current study involved a method that diverges in several important ways from those of previous fear communication studies. The present method

used brief and repeated threatening stories, to which *S* had to respond, and which spanned a four-day period (as compared to a single communication burst, the scope of recommended preventive practices given in this study was much broader; and the mode of communication—the use of programmed material—insured, to some extent, that the recommendations would be learned). These three methodological factors might well work to forestall psychological resistance to the suggested threat of the stories. Offering ample and adequate recommendations and making it easy for *Ss* to learn them would tend to relieve some of the aroused fear. To the degree this is true the experimenters lowered the probability of confirming the hypotheses by using the described method. The hypotheses might have been confirmed with fewer limitations on them had there been but a single threatening message, and fewer and less complete recommendations offered in harder to learn form.

The present findings have applicability to situations where a considerable amount of information has to be learned to prevent or ward off disastrous consequences. Practical examples are found in instruction dealing with civil defense, first aid, and accident prevention. Another kind of public health communication is that wherein only a change of behavior has to be implemented, without the attending learning task. Here the fear appeal carries a tacit or direct injunction for or against some practice—for example, to smoke in moderation, to avoid overexposure to the sun, or to wear seat belts. In either case the rule of keeping the number and severity of fear referents minimal appears valid.

E. SUMMARY

Two hundred sixty-six high school students were instructed on safe driving tactics through use of programmed manuals. Relevant stories portraying danger were interspersed systematically throughout the manuals, which gave recommendations for avoiding the kinds of situations portrayed in the stories. Stories varied on three levels of danger which were combined different ways to form five experimental *intensity* conditions. Stories were manipulated with respect to instructions to provide three *orders* for threatening stimuli. Female *Ss* showed greater retention of certain content associated with mild as compared to strong threat. Mild threat was also more effective than a nonthreat control condition. These trends were observed for males also, but were not significant. An order effect was observed for male *Ss* only, threatening stories following instruction being superior to the arrangement where stories preceded instruction. Results were more pronounced, in all cases, when retention was measured after a one-month delay period. The relationship between

manifest anxiety and retention of information did not change significantly under the different levels of threat. Findings were interpreted as being generally consistent with earlier work on the effects of fear appeals in modifying attitudes.

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RELIGIOUS DIFFERENCES IN COGNITIVE ASSOCIATIONS AND SELF-CONCEPT IN PROSPECTIVE TEACHERS*

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A. INTRODUCTION

A recent factor analytic study of professional self-conception (10) revealed two factors, Brightness-Neatness and Rapport-Power on semantic differential scales (see Method section below for an explanation of this measure), administered to 1483 college students preparing for teaching.² The present study is an exploratory investigation of these odd clusterings of scales in the same subjects classified according to religious affiliation.

Not much is known about the differences between denominations on cognitive and affective measures. Previous work in the area has been largely confined to a single factor—intensity of religious belief—without investigating the unique characteristics of separate denominations. Clark (4), for example, found religious persons more authoritarian than other persons on the California F Scale. Khana (8), using interview data, found them to be more conforming, ego defensive, ethnocentric, and perceptually and intellectually rigid than were other persons. Allen (1) found religious persons more conventional and conforming on adjective checklists than were unreligious persons. Grosser and Laczek (7) found that students educated in parochial schools recognized few taboo words presented tachistoscopically, as compared with students in other schools.

Greeley (6) summarized the literature dealing with Roman Catholic (henceforth "Catholic") influences on career values, especially on the Protestant Ethic. According to Greeley, clerical domination, absence of a scholarly tradition, fear of science, lack of concern with temporal values, and the tendency of talented youth to enter religious life are factors that account for Knapp and Goodrich's finding (9) that a disproportionately small percentage of American

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scientists are Catholic. Bieri and Lobeck (3) found Catholics significantly higher than Jews on cooperative, overconventional items on checklists ("fond of everyone," "likes everybody," "loves everyone," and "friendly"). Catholics were also higher than Jews on the items "respect for authority," "dependent," and "will believe everyone," while Jews were higher on the items "critical of others," "indifferent to others," "able to criticize self," and "able to doubt others." Moreover, Quinn (10) found Catholics from parochial secondary schools less openminded than Jews and Protestants on the Dogmatism Scale and the Watson-Glaser Critical Thinking Appraisal.

TABLE 1
CORRELATION CONTRAST HYPOTHESES

Hypothesis	Factors	Group 1-Group 2	Correlation	Probability
1	Brightness/Neatness	Catholics/Protestants	.563/ 498	.04*
2	Brightness/Neatness	Protestants/Atheists, Agnostics	.498/ 335	.08
3	Brightness/Rapport	Protestants/Atheists, Agnostics	.437/ 279	.10
4	Brightness/Power	Protestants/Atheists, Agnostics	.591/ 667	.19
5	Brightness/Rapport	Jews/Protestants	.547/.437	.05
6	Brightness/Power	Jews/Protestants	.694/ 591	.04

* One-tailed probability using Fisher's z -transformation

Catholics may be more rigid intellectually than persons of other denominations because the religious experience in the parochial schools is more intensive and prolonged than it is in other schools. Moreover, the Catholic church has spoken literally *ex cathedra* historically and in modern times on such matters as the earth-centered universe and birth control and then has forced its members to choose between tacit compliance and religious (and perhaps social and familial) excommunication. The cognitive appeal to authority is antithetical to the scientific method which uses hypothesis testing, probability, inference, and empiricism, and which entertains rival theories. In teaching, cognitive rigidity may be antithetical to understanding, flexibility, and sensitivity to individual differences. It was hypothesized that Catholics, being more categorical, more closely associate Brightness and Neatness than do other religious groups (Hypothesis 1, see Table 1).

By contrast, Atheists and Agnostics may show no strong relationships between Brightness and Neatness (Hypothesis 2). Those who deny or doubt the existence of God are more likely than other persons to distrust categorical thinking and to exhibit probability thinking and tolerance of ambiguity in other matters. A skeptical nonconformist may play the devil's advocate; he may oppose authority in religion, in his work, family, or classroom; and he

may risk his own social desirability (operationally, Rapport, Hypothesis 3) and influence on others (Power, Hypothesis 4) to defend his independent ideas (Brightness). The social pressures toward conformity are heavy, and Asch (2) has demonstrated that the dissenting person or minority becomes increasingly alienated as the majority group becomes proportionately larger. Consequently, Atheists and Agnostics, who comprise a small percentage of the population (3.4 per cent of this sample), may feel detached and impotent.

Lastly, Jews may associate intellectual endeavor (Brightness) with emotional closeness (Rapport) more than other religious groups (Hypothesis 5). Historical traditions of intellectual concern and rabbinical scholarship have been socially reinforced by parents and other significant persons in Jewish communities. Moreover, the life of mind may not only be associated with closeness to others but with leadership and prestige (Power) within and outside the Jewish family and community (Hypothesis 6). This may be one determinant of the modern propensity of Jews to enter intellectual professions, such as medicine and law.

B. METHOD

The sample consisted of 1483 undergraduate students in a midwestern urban teachers' college. The groups were divided according to religious affiliation indicated on the questionnaire. There were 55 Atheists and Agnostics, 723 Catholics, 149 Jews, and 556 Protestants. The median social class for all groups is upper-lower based upon father's occupation. The 1483 students were given the questionnaire by trained examiners in large lecture courses. About 75 per cent of the students in the college were tested.

The students had rated themselves on professional self-conception—that is, the concept "Myself as a Teacher"—on 26 semantic differential scales.³ The scales consist of two bipolar adjectives—for example, "familiar-strange"—and the subject rates himself along a seven-point continuum between each set of adjectives. The pattern of factor loadings in the previous study (11) suggested the following cluster scores: for Brightness, "sharp-blurry" and "bright-dull"; Neatness, "neat-sloppy" and "clean-dirty"; Rapport, "happy-sad," "good-bad," and "familiar-strange"; and Power, "strong-weak," "clear-vague," and "sure-shifting." The other 16 scales did not cluster with the two factors in question. Univariate statistics for cluster scores and intercorrelations were computed separately for each religious group. In each of the six hypotheses,

³ The subtest is contained in a doctoral dissertation by Herbert J. Walberg. Microfilm copies are available for \$2.00 from the Department of Photoduplication, University of Chicago Library, Chicago, Illinois 60637. Make checks payable to the University of Chicago.

Protestants are the contrast group. Differences between correlations were tested using Fisher's z -transformation (5).

C. RESULTS

The hypothesized correlation contrasts and significance levels are presented analytically in Table 1. At various significance levels all hypotheses are confirmed but number 4: contrary to this hypothesis, Brightness and Power are more highly correlated in Atheist-Agnostic group than in the Protestant group but at a low level of probability ($p < .19$). Supporting the other five hypotheses, Brightness and Neatness are correlated higher in the Catholic group ($p < .04$) and lower among Atheists and Agnostics ($p < .10$); and Brightness is correlated higher with Rapport ($p < .05$) and with Power ($p < .04$) in the Jewish group than in the Protestant group.

Also, analyses of variance, presented in Table 2, revealed that the means for the several groups are significantly different on each cluster score: Brightness, ($p < .001$); Neatness, ($p < .001$); Rapport, ($p < .001$); and Power, ($p < .005$). With the exception that Protestants are higher than Jews on Rapport, Jews have the highest self-ratings on each cluster score; Protestants, second; Catholics, third; and Atheists and Agnostics, much lower than all other groups.

D. DISCUSSION

The relatively high correlation of Neatness and Brightness in the sample of Catholics lends weight to the contentions that they are relatively more rigid, authoritarian, and categorical than other groups, and may help to explain Knapp and Goodrich's finding (9) that a disproportionately small percentage of American scientists are Catholic. The low correlation between Neatness and Brightness in Atheists and Agnostics suggests that religious skepticism influences generalized perceptual and cognitive functions which appear to be less rigid and categorical in this group than in others. If self-conception influences teaching style, teachers of the Catholic faith may be more categorical than other teachers in the classroom; Jews and Protestants may take a moderate position; Atheists and Agnostics may be tentative and hypothetical.

The hypothesis that the correlation between Brightness and Rapport is higher in the Protestant sample than in the group of Atheists and Agnostics is confirmed but at a very low level of chance ($p < .10$). The low level of statistical significance in this comparison may be partially attributable to the small number of Atheists and Agnostics in the sample. However, the support

TABLE 2
UNIVARIATE STATISTICS AND ANALYSES OF VARIANCE

Religious group	Number	Brightness		Neatness		Rapport		Power	
		M	SD	M	SD	M	SD	M	SD
Atheists & Agnostics	55	3.80	1.41	3.20	1.32	5.68	1.34	6.10	1.05
Catholics	723	4.46	1.32	5.27	1.13	6.11	1.11	6.18	1.09
Jews	149	4.73	1.45	5.37	1.38	6.13	1.25	6.36	1.03
Protestants	556	4.67	1.25	5.31	1.04	6.20	1.00	6.33	1.05
MS between		16.93		92.93		42.27		24.72	
MS within		1.72		1.29		4.82		4.92	
df		3/1479		3/1479		3/1479		3/1479	
F		9.85		72.03		8.77		4.02	
p		.001		.001		.001		.005	

for the hypothesis, weak though it is, suggests that in contrast to Atheists and Agnostics, Protestants, who rate themselves high on Brightness, are more likely to rate themselves high on Rapport. The lower correlation between these factors in Atheists and Agnostics suggests a relative emotional alienation of the intellect. For scholars, researchers, or teachers, the detachment of cognition and affect may imply scientific objectivity, but on the other hand it may also be equated with the dry, skeptical reserve and cynicism of reason without passion for the subject or the student.

Contrary to Hypothesis 4, Brightness is more closely associated with Power in Atheists and Agnostics than in Protestants but at a very low level of probability ($p < .19$). This finding prompted an analysis of the mean differences between the four groups. Table 2 shows that Atheists and Agnostics not only rate themselves much lower than other groups on Brightness and Power but on Neatness and Rapport as well. For example, all t -test contrasts of this group with Protestants are significant ($p < .001$). The alienation of dissenting minorities discussed in the formulation of hypotheses may bring about a separation of cognition and affect (revealed in Hypothesis 3), and apparent feelings of unworthiness and self-depreciation in this group.

Lastly, Hypotheses 5 and 6 are confirmed: Jews more closely associate Brightness with Rapport and Power than do Protestants. The differences in correlations and means are not large between these groups. Jews and Protestants are alike in that they do not have the apparent intellectual rigidity of Catholics nor the cognitive-affective alienation and self-depreciation problems of Atheists and Agnostics.

The hypotheses in this study concern correlations of self-ratings in the several religious groups. However, analyses of variance revealed highly significant differences between the groups if we examine the means (see Table 2). On all four scores (Brightness, Neatness, Rapport, and Power) Jews rate themselves highest; Protestants, second highest; Catholics, third; and Atheists and Agnostics are much lower than the other groups. The only exception to this ordering is that Protestants are slightly but not significantly higher ($p > .10$) than Jews on Rapport.

These findings complement the results and interpretation of the correlational contrasts. Atheists and Agnostics are lowest because they may be the dissenting, alienated, self-depreciating minority. Protestants are higher than Catholics because they apparently do not have the problem of intellectual rigidity (high correlation of Brightness and Neatness). Jews rate themselves highest because Brightness is not only highly integrated—i.e., correlated—with Rapport and Power, but socially reinforced.

E. CONCLUSIONS

Until this study is confirmed in other samples the results must be tentative and cautiously interpreted. Religious denomination is obviously confounded with other factors, such as intensity of belief, intrinsic and extrinsic orientations, social class, ethnicity, and cultural position, which may be causally related to the dependent variable, professional self-concept. For example, an alternate explanation of the results lies in the pattern of traditions and cultural positions of the four denominational groups. Jews could have rated themselves highest because the teacher and scholar have had high positions in Jewish subcultures. Protestants may have rated themselves higher than other groups because their families typically have higher social-class status than Catholics; and the Catholic pattern of dogmatism may not be related to denomination as such but to parochial education or to patriarchal family patterns of ethnic groups within the denomination. In addition to being skeptical of the existence of God, Atheists and Agnostics may be doubtful about their own self-concept. In these times of religious ferment, one might also question the validity of the term "denomination." If Protestant Fundamentalists were grouped with Catholics, and Protestant Liberals with Jews and Agnostics, the differences between the groups might be even more striking. Replications of this study in larger samples with more experimental design classifications may point to the correct interpretation and advance our understanding of the impact of denominational, social, cultural, and ethnic factors on self-concept.

F. SUMMARY

A semantic differential study of professional self-conception in 1483 women teacher trainees confirmed the following hypotheses: with Protestants as the comparison group, Brightness is correlated higher with Neatness in Roman Catholics; lower with Neatness, Rapport, and Power in Atheists and Agnostics; and higher with Rapport and Power in Jews. Jews rated themselves highest followed by Protestants and Catholics. Atheists and Agnostics were much lower than other groups. Some socially bound cognitive and interpersonal patterns in educational settings are discussed in the light of the findings.

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FAMILIARITY, SALIENCE, AND THE ORDER OF PRESENTATION OF COMMUNICATIONS*¹

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A. PROBLEM

Beginning with Asch (12) and continuing in the work by Luchins (17, 18, 19, 20) and Anderson (1, 6, 8, 11), a consistent primacy effect has been obtained in experiments where the stimuli consisted of conflicting bits of information describing the personality of a fictitious individual. These results imply, at least in the laboratory situation, that observers' impressions of an unfamiliar person are influenced more by the information available to them first (primacy) than by the information available last (recency).

Using opposed arguments on controversial issues as stimuli, both Lana (14) and Rosnow and Lana (27) have found that decreased familiarity is directly related to an increased recency effect, and increased familiarity to an increased primacy effect. That is, people who are unfamiliar with a controversial issue tend to be influenced more by arguments presented last than by those presented first; people who are familiar with the issue tend to be influenced more by arguments presented first than by those presented last.

The familiarity relationship is perplexing because of the apparent inconsistency between these persuasion and impression formation findings. On the one hand, Lana and Rosnow find recency for unfamiliarity. On the other hand, the results obtained by Asch, Luchins, Anderson and their colleagues imply primacy for unfamiliarity.³

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⁴ Although two other persuasion studies by Lana (15) and Thomas, Webb, and Tweedie (30) report no significant relation between order effects in opinion change and familiarity, their results do not lessen the confusion. Since in neither study is there any indication that the opposed communications were individually pretested, there is the possibility that the negative results are simply a function of impotent stimuli. Also, since the instances of recency in impression formation (9, 13, 21, 23, 25, 29, 31) are directly related to variables other than familiarity, they do not resolve the controversy.

The two experiments reported here were carried out for the purpose of defining further the familiarity relationship, and—since familiarity may “naturally” interact with salience—for investigating the role of salience as an independent variable influencing personality impression formation.⁴

B. EXPERIMENT 1

1. *Method*

The first experiment was an exploratory study designed to replicate part of the procedure and the statistical analysis of a typical impression formation study [see Luchins (18)]. The principal modification was that, instead of using as stimuli communications describing a fictitious individual, the subject of the authors' communications was a living person with whom an overwhelming number of the raters (> 90 per cent) already were familiar. The subject was a highly publicized professional football player who was identified by name in the communications. To assure the raters' familiarity with the subject and the salience of their impressions of him, the experiment was carried out at the peak of the professional football season. At that time the already well known subject figured very prominently in the news.

a. Raters. The raters were 93 male and 37 female nonvolunteer undergraduate students from a social science class at the School of Public Communication of Boston University. To check the familiarity manipulation, the authors obtained the students' responses to an information questionnaire containing biographical items about the subject. The scores on the information questionnaire could range from zero (for total unfamiliarity) to seven points (for highest familiarity). The mean score obtained was 5.4, $s = 2.0$, indicating the raters' moderately high familiarity with the subject.

b. The communications. Two communications were used. They were patterned after those used by Luchins (18). One of the communications was a positive appeal (P); it portrayed the subject as friendly, outgoing, and generous.

T—— was observed earnestly shaking hands with admirers as he was leaving the stadium after the Cardinals-Giants football game. Since he thoughtfully asked me to tag along, we strolled together along the sun-filled streets—as if we were life-long friends—basking in the sun as we walked. As we nonchalantly swapped humorous sports stories, we were

⁴ By salience, the authors mean here the prominence, or distinctiveness, of an impression in an individual's social-perception repertoire. Impressions that are highly salient are those which are most prominent and of which the individual is highly aware; nonsalient impressions are those which are least prominent and lowest in awareness.

momentarily halted by a swarm of children who immediately recognized their sports hero, asked for, and graciously received his sincere warm words and highly valued autograph. Continuing on our way, we met and briefly talked to X——, a long time acquaintance of mine and close personal friend of T——'s.

The other communication was a negative appeal (N); it pictured the subject as unsocial and unfriendly even to the point of exhibiting outward hostility.

At a restaurant near the stadium we paused to grab a quick snack. Though most of the room was filled with sunlight, at T——'s surprisingly loud-voiced request we were seated at a table in a more bleak corner of the large room. Not only was I made uncomfortable by his abusive words to the elderly waiter, but I felt embarrassed by his refusing even to acknowledge some exceptionally complimentary remarks from two fellow diners who happened to recognize him and requested his autograph. We ate quickly, and once we had finished our meal I followed him as he sullenly shuffled out the door and, almost running, continued on his way.

Both of the passages were identified as emanating from a common source—"edited excerpts from a recent article by a popular sports writer." Two other descriptions were obtained by combining the positive and negative passages. When the P description was immediately followed by the N description, without a paragraph indentation between the two, the authors refer to it as the PN sequence. When the N description immediately preceded the P description, the authors refer to it as the NP sequence.

c. Procedure. The design consisted of four counterbalanced experimental groups and a "zero" control. All of the treatments were carried out simultaneously during a regularly scheduled class meeting.

The experiment was introduced as a study of "how we form impressions of others based on what we read or hear about them." Raters in the experimental groups were presented with a booklet containing the information questionnaire for measuring familiarity, a communication, and a nine-point graphic scale for rating the subject's friendliness-unfriendliness on the basis of the information contained in the communication. The rating scale ranged from "extremely friendly" at one end of the continuum to "extremely unfriendly" at the other end, with the neutral phrase "neither friendly nor unfriendly" anchoring the middle. Half of the experimental groups received one-sided communications (either P or N); the other half received two-sided communications (either PN or NP). Control raters completed the information questionnaire and the rating scale but received neither communication.

2. Results

a. Neutral responses. Luchins observed in his experiment that failure to rate the subject in a positive or a negative direction was relatively rare, ranging from zero to 13 per cent in his experimental and control groups (18). This finding occurred despite his expectation that because of the apparently inconsistent and contradictory information contained in a two-sided communication his judges would have some difficulty in rating the subject on the basis of a friendly-unfriendly or a friendly-shy classification.

The percentages of failures to respond, or "neutral ratings," listed in Table 1 are higher than those reported by Luchins, but even they are not entirely

TABLE 1
SURVEY OF THE RESULTS IN EXPERIMENT 1

Treatment group	Positive, or "friendly," ratings %	Neutral ratings %	Negative, or "unfriendly," ratings %
P (25) ^a	100	0	0
N (27)	18	30	52
Control (25)	64	36	0
PN (27)	59	15	26
NP (26)	77	8	15

^a The number of raters in each group is indicated within parentheses.

consistent with his original prediction. The percentages range from a mean of 11 per cent in the two-sided PN and NP groups, and a mean of 15 per cent in the one-sided P and N groups, to 36 per cent in the control. Consistent with Luchins' original prediction, the lowest percentage of neutral ratings is in a one-sided communication group (P), where no contradictory information was presented. Inconsistent with his prediction is the comparatively high 30 per cent neutral rating in the other one-sided group (N) and the comparatively low 8 per cent neutral rating in the two-sided group NP.

b. Potency of the communications. The relative effectiveness of the one-sided communications as persuasive appeals is implied by the high percentage of positive, or "friendly," ratings for the P message and the low percentage of positive ratings for the N message. All raters who received the one-sided P message rated the subject as friendly; less than one-fifth of the raters who received the one-sided N message rated the subject in the opposite direction advocated in the message.

c. Primacy-recency. Order effects were estimated using a procedure described by Luchins (18). An Index 1 was computed by subtracting the per-

centage of P responses in group NP from the percentage of P responses in group PN. An Index 2 was computed by subtracting the percentage of N responses in group PN from the percentage of N responses in group NP. A positive quantity is taken as an indication of primacy, a negative quantity as an indication of recency.

These results were as follows: Index 1 = -18, Index 2 = -11, yielding a mean score of -15. This suggests a weak but overall trend in the direction of recency.

3. *Discussion and Hypotheses*

First, consistent with a prediction by Luchins, neutral ratings are lowest in a one-sided communication group (P); but, inconsistent with his hypothesis that because of the perceived contradiction in two-sided messages judges will have difficulty rating the subject, only 8 per cent of the raters who received a two-sided communication (NP) were unable to rate the subject favorably or unfavorably. Second, the potency of the one-sided messages is attested to by the high percentage of friendly ratings in a group receiving only the friendly description, and the low percentage of friendly ratings in a group receiving only the unfriendly description. In fact, since judges generally tended to rate the subject favorably, and since there were no negative responses in the control, possibly judges' original impressions of the subject also tended to be favorable. Therefore, the percentages of negative ratings indicate the effectiveness of the treatments in weakening the original impressions (i.e., incongruent impression change). Third, a weak recency effect is associated with relative familiarity with the subject. The authors noted earlier that primacy has been a fairly consistent finding in impression formation under conditions of unfamiliarity with the subject. In opinion change, however, recency is related to unfamiliarity, and primacy to familiarity. At first glance, then, the recency effect here implies a relationship in impression formation either diametrically opposite to that observed in opinion change or at least more complex than has been intimated in the literature.

a. U curve hypothesis. It may be possible to reconcile the apparent inconsistency between the recency finding here and the various findings noted earlier by hypothesizing a roughly U-shaped function to describe the relation between familiarity and primacy-recency. This U curve hypothesis is depicted in Figure 1 as a curvilinear relation between the probability of occurrence of primacy-recency and raters' degree of familiarity with the subject; it derives from the following findings:

Lana (14) found a primacy effect under conditions of high familiarity

with a controversial issue; the same tendency toward primacy was obtained by Rosnow and Lana (27) in a similar persuasion experiment. This familiarity-primacy association is depicted in Figure 1 as an asymptote reached after increased familiarity.

Asch (12), Luchins (17, 18, 19, 20) and Anderson (1, 6, 8, 11) also

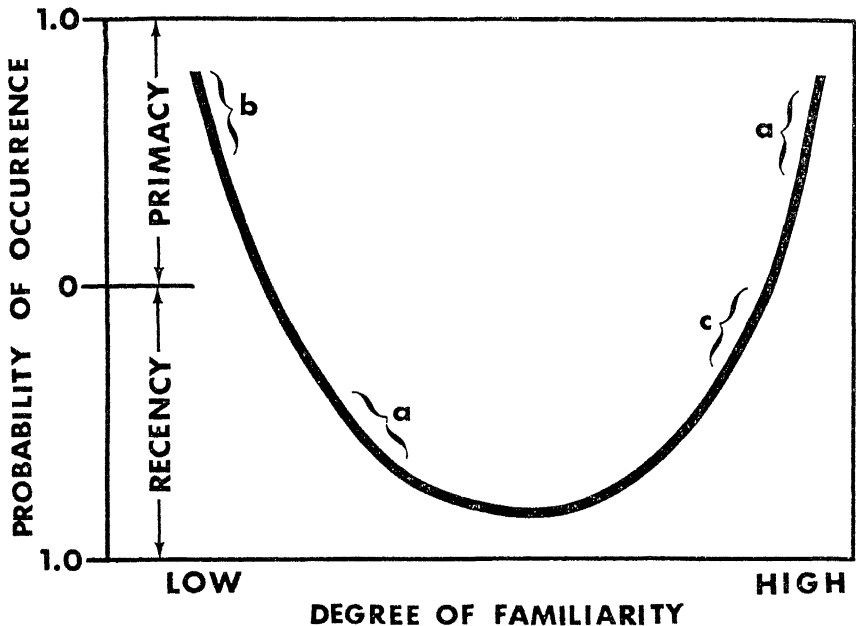


FIGURE 1

PREDICTED RELATION BETWEEN THE PROBABILITY OF OCCURRENCE OF PRIMACY-RECENCY AND RATERS' DEGREE OF PRIOR FAMILIARITY WITH A SUBJECT

^a See Lana (14), and Rosnow and Lana (27).

^b See Asch (12), Luchins (17, 18, 19), Luchins and Luchins (20), Anderson (1, 6), Anderson and Barrios (8), and Anderson and Norman (11).

^c Experiment 1.

observed primacy—but under conditions of total unfamiliarity with the subject. This unfamiliarity-primacy association is depicted in Figure 1 as an asymptote reached after increased unfamiliarity.

Lana (14) and Rosnow and Lana (27) found recency when participants presumably were relatively unfamiliar with the topic of opposed persuasive communications. Hindsight suggests that their “unfamiliarity” might better be thought of as “low familiarity,” since the former term connotes *total* unfamiliarity—a condition which is rarely achieved when topics as controver-

sial and discussed as those used by Lana ("vivisection") and Rosnow and Lana ("civil defense") serve as the experimental stimuli.

Also noted in Figure 1 is the weak recency effect for moderately high familiarity found in Experiment 1.⁵

A U curve hypothesis, therefore, leads to the prediction that under conditions of either high familiarity or unfamiliarity the probability of occurrence of primacy tends to increase. As familiarity decreases, the probability of occurrence of primacy gradually, concomitantly decreases to zero, and then the probability of occurrence of recency increases as familiarity continues to decrease. After the nadir of the function has been reached the probability of occurrence of recency decreases to zero, and then both unfamiliarity and the probability of occurrence of primacy increase monotonically.

b. Salience. It is evident from the results summarized in Table 1 that although slightly more incongruent impression change is associated with the PN sequence than with NP, the difference is well within chance ($z = 1.00$, $p > .25$ two-tailed). If salience were minimal, then it could be predicted from an *Einstellung*, or "set," hypothesis that the NP sequence would induce greater incongruent change than would the PN. Under *Einstellung*, as it has been elaborated by Lana (16), Luchins and Luchins (19, 22) and Anderson and Barrios (8), it is asserted that the initial communication acts as an anchorage that influences the recipient's reaction to subsequent communication. It is assumed that little or no "organization" already exists in the recipient with respect to the communication (an assumption that is tenable under conditions of minimal salience or nonsalience but which could not be defended when salience was as high as it was presumed to be in Experiment 1). Further, the nonsalient initial communication establishes a set which then influences all subsequent, relevant responses. The result is that a communication which presents a particular impression about a nonsalient subject will tend to render succeeding counter-communication decreasingly effective for influencing opinion about the subject.

If this reasoning is extended to the present study, a kind of primacy effect can be hypothesized when nonsalience prevails. When observers who already are disposed favorably toward a subject receive nonsalient two-sided information about the subject, because of the nonsalience and other conditions related to prior entry (24) the information presented first should exert a

⁵ Since the Asch, Anderson, Luchins, Lana, and Rosnow studies do not share a common dependent or independent quantitative base, they are intended in Figure 1 to appear as regional clusters rather than discrete points. This should imply to the reader that the U function is a crude, not a perfect, fit.

greater influence on opinion-attitude change than the information presented last. It follows that if the information presented first has the greater impact, then a negative-positive sequence will produce more negative reaction than the reverse sequence. Because recipients already perceive the subject positively, if the first information they receive is also positive then it will be consonant with their original impressions of the subject (and *vice versa*). Therefore, a dissonant-consonant order of presentation would be expected to produce greater incongruent change than a consonant-dissonant sequence.

It would also be expected that the incidence of neutral ratings would be higher under nonsalience than under salience—thus supporting Luchins' (18) original prediction. This would be due to the combined effects of lack of "organization" and increased indecision. Moreover, were both familiarity as well as salience minimal, it seems reasonable to expect that indecision would be even greater; and the number of neutral ratings, therefore, would be even higher.

C. EXPERIMENT 2

All of these hypotheses were tested in Experiment 2, that (a) under conditions of nonsalience, or minimal salience, a dissonant-consonant (NP) order of presentation will produce greater incongruent impression change than the reverse sequence (PN); (b) the incidence of neutral ratings will increase as salience and familiarity decrease; and (c) a U-shaped function best describes the relation between degree of familiarity with the subject and subsequent order effects in opinion-impression change.

1. *Method*

Experiment 2 consisted of replicating the NP and PN treatments on a college student sample similar to, but larger than, that used in Experiment 1—thereby yielding an increased distribution of ratings on the basis of degree of familiarity with the subject. The experiment was carried out several months after the end of the professional football season. The authors' assumption was that with the football season ended and the subject, therefore, no longer prominently in the news, what once were highly salient associations about him would now be nonsalient, or at least markedly less salient.

The raters were 82 female and 142 male nonvolunteer college students. Each rater completed an information questionnaire patterned after the one used in Experiment 1 but modified to permit a slightly expanded range of ratings. The range of scores on the information questionnaire was zero (for total unfamiliarity) to nine points (for highest familiarity). Despite the

expanded range the obtained mean familiarity score of 5.4 ($s = 2.1$) was identical to the one obtained in Experiment 1. All of the other materials and the experimental procedure matched exactly that which was elaborated earlier.

2. Results

a. Salience hypotheses. A survey of the results obtained in Experiment 2 is summarized in Table 2. These results reflect the fact that the sample was split at the median into a high familiarity group and a low familiarity group; the mean familiarity scores of the two groups differed from one another beyond the .05 level of significance. Since the experiment consisted primarily of

TABLE 2
SURVEY OF THE RESULTS IN EXPERIMENT 2

Treatment group	Positive ratings %	Neutral ratings %	Negative ratings %
High familiarity			
PN (47)	39	22	39
NP (63)	11	18	71
Low familiarity			
PN (53)	30	30	40
NP (61)	27	28	45

replicating the PN and NP treatments from Experiment 1, the groups are further subdivided on the basis of these treatments.

It was predicted from *Einstellung* that greater incongruent impression change would result from a dissonant-consonant sequence than from the reverse order of presentation. There is strong support for this hypothesis in the high familiarity group, where 71 per cent of the raters exposed to a dissonant-consonant sequence (NP) and 39 per cent of those exposed to a consonant-dissonant sequence (PN) responded negatively. The difference between these percentages is highly significant ($z = 3.49$, $p < .0003$ one-tailed). The *Einstellung* prediction is not supported in the low familiarity group ($z = .54$, $p > .25$ one-tailed). It is not clear at this point why the hypothesis is supported in one group and not in another, particularly since one might have expected less cognitive organization in participants less familiar with the subject and, therefore, possibly even stronger support for the *Einstellung* prediction here than in a high familiarity group. If interest is positively correlated with familiarity, then one possible explanation for this finding is that the low familiarity group lacked sufficient interest to attend to the stimuli. This, of course, is conjecture.

It was also predicted that neutral ratings would be more prevalent under conditions of nonsalience than under conditions of salience, and most prevalent when nonsalience interacts with unfamiliarity. The results in Table 2 fully support those predictions. Under the conditions of salience assumed in Experiment 1, roughly 11 per cent of the ratings of the PN and NP groups were neutral (Table 1). Under the condition of nonsalience, or minimal salience, assumed in Experiment 2, Table 2 indicates a significantly higher percentage of neutral ratings. Approximately 20 per cent of the ratings in the high familiarity group are neutral, while (as expected) an even higher percentage (approximately 29 per cent) of neutral ratings is indicated in the low familiarity group.

TABLE 3
ANALYSIS OF VARIANCE OF IMPRESSION RATINGS IN EXPERIMENT 2

Source	<i>df</i>	<i>MS</i>	<i>F</i>
Order of presentation (A)	1	38.53	10.19**
Level of familiarity (B)	4	8.84	2.34*
Linear	1	.03	
Quadratic	1	.03	
Cubic	1	.01	
Quartic	1	.02	
Order \times level (AB)	4	3.51	.93
Within cell	214	3.78	

* $.05 < p < .10$.

** $p < .01$.

b. U function. A curvilinear nonmonotonic relation between familiarity and the probability of occurrence of primacy-recency was posited in order to reconcile the apparent inconsistency between the findings in Experiment 1 and findings reported earlier in the persuasion and the impression formation literature. This curvilinear relation, depicted in Figure 1 as a U-shaped function, was tested by computing a 2×5 analysis of variance and trend analysis on the friendly-unfriendly ratings obtained in Experiment 2. These results are summarized in Table 3.

The first factor in the analysis of variance, comprised of two levels, consists of the PN and the NP orders of presentation. The second factor consists of five levels of familiarity: "unfamiliarity" (raters whose familiarity scores were either 0 or 1), "minimal familiarity" (scores of 2 or 3), "moderate familiarity" (scores of 4 or 5), "relatively high familiarity" (scores of 6 or 7), and "high familiarity" (scores of 8, 9, or 10). Although there are significant differences associated with each of the main effects, no significant trend is indicated. The significant differences associated with the two main effects

are completely consistent with expectations on the basis of the salience hypotheses. However, the U function receives no support. The quadratic trend that was predicted was not obtained.

Although the findings in Table 3 preclude a U-shaped function for familiarity, when on the basis of familiarity scores the sample was split at the median into a "high" and a "low" group, results using the Luchins computation procedure to identify order effects are consistent within the framework of a U curve hypothesis. For the high familiarity group, Index 1 = +28, Index 2 = +32, yielding a mean score of +30. For the low familiarity group, Index 1 = +3, Index 2 = +5, yielding a mean score of +4. Both the strong primacy effect in the high familiarity group and the negligible primacy effect in the low familiarity group can be predicted purely on the basis of the U-shaped function (Figure 1). Although this finding is not conclusive, it is at least consistent with a U curve hypothesis. Any final decision about accepting or rejecting this hypothesis can only be deferred until more definitive evidence has been gathered.

D. GENERALITY OF THE FINDINGS

From the standpoint of prediction, the systematic investigations carried out by Anderson and his colleagues (1, 2, 3, 4, 5, 6, 7, 10) comparing an additive *versus* an averaging model represent one of the more promising strategies in impression formation research. It is problematic, however, at this stage whether the generality of his findings extend to situations like the present one. To date, the only stimuli used to test Anderson's weighted average model have been either lists of personality traits (1, 2, 5, 6, 7, 10) or series of two-digit numbers (4). It would be interesting to find out whether the same weighted average model that has been so successful when words serve as stimuli also is successful when the words are imbedded in meaningful prose passages. This information could have important implications not only for research on impression formation using simple stimuli, but for the whole problem area of primacy-recency.

In the absence of that information one can only conjecture about the relationship between Anderson's findings and the authors' own findings. It can be argued that prose passages represent an entirely separate class of stimuli from those used by Anderson in the particular studies cited above. The prose passage used in the present investigation would seem to share more of a commonality with the kinds of impression stimuli used by Luchins (17, 18), Luchins and Luchins (20, 21, 22), Mayo and Crockett (23), Rosenkrantz and Crockett (25), and Weiss and Lieberman (31), and with the prose

persuasion stimuli used in primacy-recency opinion change studies (26) than with the simple adjective or number stimuli used by Anderson and his colleagues in their research cited above.

Thus, it is possible that the present findings may only have implications for prediction in impression formation when the particular class of stimuli used is some type of prose passage. However, since the prose passage is the conventional stimulus in most laboratory opinion change studies, those findings may have broad implications for the body of research associated with persuasive communication.

E. SUMMARY

In two Luchins-type impression formation experiments, both using an after-only design, nonvolunteer college students were exposed to short communications describing the personality of a well known sports figure positively (i.e., friendly, outgoing, generous) and/or negatively (i.e., unfriendly and unsocial). The following results were obtained:

1. Primarily based on an *Einstellung* hypothesis, it was posited that cognitive "organization" would decrease and indecision increase, the less familiar was the subject of the communications and the less salient were impressions of him. It was predicted that one result would be an increased incidence of neutral ratings on items asking raters for their impressions of the subject. The findings strongly support this hypothesis. The tendency to rate neutral was more prevalent when impressions of the subjects were nonsalient, or minimally salient, than when they were salient, and most prevalent when non-salience interacted with unfamiliarity.

2. It also was predicted from *Einstellung* that under conditions of non-salience a kind of primacy effect would result. That is, when cognitive organization is reduced, the first communication because it supplies the recipient with new organization should have greater potency than the last. Therefore, greater incongruent impression change (i.e., weakening original impressions) should result when recipients' initial exposure is to a communication dissonant with their original impressions than to a communication consonant with their original impressions. In this study, since recipients' original impressions of the subject were positive, the hypothesis would be confirmed if more negative responses resulted from exposure to a negative-positive sequence than to a positive-negative sequence of communications. The hypothesis was in fact supported with raters highly familiar with the subject, but was not supported with raters unfamiliar with the subject. If a positive correlation exists between interest and familiarity, then it is possible to explain this finding

by suggesting that the low familiarity group may have lacked sufficient interest to attend to the stimuli.

3. The results also indicated a tendency toward recency when salience was high. Since salience may "naturally" interact with familiarity, the role of familiarity in primacy-recency would appear, therefore, to be more complex than has been intimated in the literature. In fact, a recent study by Sears and Freedman (28) finds that even the expectation of unfamiliarity may serve as a potent catalyst for increasing the effectiveness of a persuasive appeal. Although the experiments reported here originally were intended to clarify the familiarity relationship in impression formation, their results raise many more questions about that variable than they answer. A U curve hypothesis, designed to reconcile the apparent inconsistency between an unfamiliarity-recency finding in opinion change and unfamiliarity-primacy in impression formation, received only weak support, and a final decision accepting or rejecting that hypothesis was deferred until more definitive evidence can be gathered.

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COMPONENTS OF SOCIAL DISTANCE AMONG COLLEGE STUDENTS AND THEIR PARENTS IN HAWAII*

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A. INTRODUCTION

Diversity and change characterize interpersonal attitudes in modern Hawaii. Because its population is diverse in cultural background, Hawaii is a promising setting in which to explore some of the determinants of social distance using multivariate methods of measurement. Because typical attitudes toward others are changing rapidly as immigrant families from the Orient are acculturated [see Lind (9)], comparisons between parents and their children may be especially fruitful for the social scientist.

The present study² is concerned with two questions: (a) To what extent do the components of physical ability, understanding, competence, and national-ethnic origin contribute to social distance? (b) Within Japanese, American, and Caucasian groups in Hawaii, how do parents compare with their college-age children in expressed social distance? Also of interest are comparisons across parent and across student groups.

It was hypothesized, first, that the components of physical ability, understanding, competence, and national-ethnic origin would all prove to be significant contributors to social distance for both parents and children, but that these components would vary in strength. In other words, the determinants of social distance would be multidimensional. This hypothesis was based on studies by Westie (19), Dent, Gaston, and Dole (3), Rickard, Triandis, and Patterson (13), Triandis and Triandis (17, 18), and Triandis (16). Second, research by Plant (12), Triandis *et al.* (17, 18), Digman (4), Lind (9), Arkoff (1), and Fenz and Arkoff (6) led to the hypothesis that student subjects, especially Japanese-Americans, would express less social distance than would their parents. Higher education is seen as a potent agent of acculturation and of increased acceptance of other persons.

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B. METHOD

1. *Setting*

The research was conducted in Honolulu, Hawaii. Honolulu lends itself well to intergroup comparisons of social distance. The city is unique in the polyethnic origin of its residents but comparable in standard of living, social institutions, and customs to other American cities. Hawaii has a reputation for acceptance of others, yet observers frequently remark on the varied, distinctive, and well-established interpersonal attitudes within different immigrant Oriental and Occidental subgroups. With acculturation these attitudes may be modifying rapidly.

2. *Subjects*

Almost all parent subjects were obtained through students enrolled in introductory psychology classes at the University of Hawaii. Resident students who responded to a social distance scale were asked to take home a copy of the instrument for their parents to complete. A few young high school and college graduates and their parents also participated. From a pool of 101 parent-student pairs, three student and three parent groups of 20 Ss each were formed. As a test of the generality of the components, the three parent groups were selected to maximize differences between them, particularly in ethnic origin, sex, and generation in the United States.

a. Caucasian parents vs. students. The Caucasian parent group consisted of 10 mothers and 10 fathers who reported that they had been in the United States three generations or more. Their mean age was 45.5 years (age range 39-65), at least half had some college education, and median annual income exceeded \$5000. The Caucasian student group consisted of eight sons and 12 daughters of the Caucasian parent group with a mean age of 19.0 years (age range 17-22), all students at the University of Hawaii. These subgroups, in sum, were selected on the basis of generation and ethnic origin.

b. Nisei parents vs. Sansei students. The Nisei (second generation Japanese-American) parent group consisted of 20 mothers whose parents were born in Japan and had immigrated to Hawaii. These mothers had a mean age of 46.7 years (age range 38-55) and had no more than a high school education. Half were housewives. The Sansei (third generation Japanese-American) student group consisted of 20 daughters of the Nisei mothers, all attending the University of Hawaii. The mean age for this group was 18.5 years (age range 18-19). These subgroups, then, were selected on the basis of sex, generation, and ethnic origin.

c. Issei parents vs. Nisei students. The Issei (first generation Japanese-American) group consisted of 16 fathers and four mothers all born in Japan who had immigrated to Hawaii. These parents had a mean age of 57.9 years (age range 49-64). Only six had high school or college educational experience and only seven had earnings of over \$5000 a year. The Nisei student group was formed from 12 sons and eight daughters of the Issei parents and had a mean age of 22.4 years (age range 18-26). Fifteen of the students were attending the University of Hawaii. To increase the size of this sample, it was necessary to add three recent college and two high school graduates whose parents were known to have been born in Japan. These comparison groups were chosen from the subject pool for analysis on the basis of generation and ethnic origin.

To summarize, each of the three parent subgroups was so selected as to differ from at least one of the other subgroups in ethnic origin, generation, and sex. The parent subgroups also tended to differ from one another in age, education, and income. It followed logically that each of the three subgroups of college student children also differed from at least one of the other subgroups in ethnic origin and generation. Furthermore, one college sample included only daughters; another was older and included some nonstudents. Because of the method of forming subgroups from the parent-student subject pool, it was reasoned that if similar results were obtained in diverse samples conclusions would have maximum generality.

3. Comparisons

In the first phase of the study the relative importance of the four social distance components was examined in six separate analyses. The second phase of the research stressed comparisons of three student groups with their own parents on expressed social distance.

4. Description of Instrument

The 3-D (Dent-Dole Distance) Scale,³ was adapted for use in this study [see Dent *et al.* (3)]. A desirable or an undesirable descriptive term for each of four components is presented randomly in all possible combinations, yielding 16 hypothetical stimulus persons. The four components selected for this research and their descriptive terms were as follows: physical ability—"physically normal" or "without two legs"; understanding—"understands others" ("able to perceive clearly the nature of another's behavior") or "lacks understanding

³ Copies of the 3D Scale may be obtained from Arthur Dole, Department of Psychology, University of Hawaii, Honolulu, Hawaii.

of others"; competence—"competent" ("qualified, capable of fulfilling all requirements") or "barely competent"; and national-ethnic origin—"of your own nationality" or "Negro."

In responding to the 3D Scale Ss are asked to rate the 16 stimulus persons on nine social distance steps using a five-point Likert scale of acceptability. To illustrate, one of the hypothetical stimulus persons is described as "understands others, without two legs, highly competent, of your own nationality." Respondents are asked, "Would you . . . marry a person like this? Have as a counselor on intimate problems? Have as a close friend? Have as a next-door neighbor? Employ as third grade teacher? Work in same office? Have as a speaking acquaintance? Accept in your family's school? Permit to vote?" Ss are instructed to "respond to each person as follows: 5 for absolutely, 4 for probably, 3 for not sure or cannot say, 2 for probably not, and 1 for absolutely not." A score of 45 then represents high acceptance and 9 low acceptance. Thus a social distance score may be obtained for each stimulus person. In addition, a total acceptance of others score and a score for each of the four undesirable component terms may be computed.

The successive social distance steps were adapted from Bogardus. The four components were selected primarily because of the authors' specific interest in the acceptability of disabled persons as an aspect of social distance in a polycultural population. In choosing the acceptable and unacceptable terms for physical disability, it was reasoned from observation that Oriental cultures might tend to devalue crippled persons. A pilot study indicated that the Negro ranked low in acceptability compared to other national-ethnic groups among college students in Hawaii; Triandis and Triandis' cross-cultural study (17) suggested membership in one's own national group might be stressed by immigrant subjects. Rickard, Triandis, and Patterson's research (13) on employer attitudes indicated that the personal attribute of job competence might offset disability or group membership. A second personal attribute, understanding, was introduced on the basis of a preliminary study. When asked to list adjectives describing another person in whom they would or would not be willing to confide, respondents most frequently used the expressions "understanding of others," and "no understanding" or the equivalent. Finally, to the authors' knowledge these four components had not previously been combined with the use of the Triandis technique.

Validity of the 3D Scale was examined through semistructured interviews with selected subjects and through a preliminary study in which the components were translated from verbal into more reliable terms. (Pictures, tape recordings, documents, etc., were used to represent the hypothetical persons.)

Stability of scores over a one-week period ranged from .22 to .85, median .67. It was concluded that the scale was adequate for purposes of the study. Additional evidence about the construction of the 3D Scale and its reliability and validity has been presented in Dent *et al.* (3) and in Shim (14).

5. *Analyses*

Analysis of variance was applied to the data within each of the groups to determine the relative strength of each stimulus component (components by subjects) [see Lindquist (10)]. In order that the differences between the six groups could be studied, on each of the four component measures an analysis of variance was also applied to the responses of all Ss (undesirable components by groups). Duncan's new multiple range test (5) was used to compare differences between group means on the undesirable components. The differences between the mean social distance score of parents and the mean of their children on each of the 16 stimulus persons was tested by the *t*-test for independent means (two-tailed). To compare the groups on the relative social distance of the stimulus persons Spearman's rank-difference correlation method was applied to the means (11).

C. RESULTS

1. *Contribution of Components*

When analyses of variance were performed on the data obtained from each of the six groups to investigate the contribution of the four components to social distance, as hypothesized each of the four components was significant within all six groups but varied in strength (Table 1). The components of understanding and competence accounted for 60 per cent or more of the variance in all six groups. Except in the two Japanese parent groups, national-ethnic origin accounted for no more than 5 per cent of the variance. In the Nisei and Issei parent groups, national-ethnic origin contributed approximately one-sixth of the variance. The physical ability component was responsible for no more than 3 per cent of the variance in any of the six groups. Although a number of the interactions between components attained significance, none accounted for more than 4 per cent of the variance in any analysis (14).

2. *Groups Compared on Components*

When the four stimulus components were treated separately in analyses of variance, the main effects of groups were in all instances significant ($p < .001$, $df = 5$; understanding, $F = 21.32$; competence, $F = 20.50$; national-

TABLE 1
ANALYSIS OF VARIANCE OF SOCIAL DISTANCE SCORES WITHIN GROUPS

Group	Subjects and interactions (<i>df</i> = 315)	Source			National-ethnic origin (<i>df</i> = 1)	Physical ability (<i>df</i> = 1)
		Understanding (<i>df</i> = 1)	Competence (<i>df</i> = 1)			
Caucasian parent						
MS	1,374.3	5,064.2	5,096 0	664.1	123 8	
% variance	12	41	41	5	1	
<i>F</i>		118.3***	103 6***	11 5**	5 7*	
Caucasian student						
MS	672.5	3,019 7	4,168 8	184 5	206 4	
% variance	10	36	50	2	2	
<i>F</i>		120.6***	67 8***	14 5**	21.2***	
Nisei parent						
MS	2,303.8	5,248.8	4,176 0	2,832 2	231 2	
% variance	17	35	28	19	1	
<i>F</i>		97.9***	49 9***	29.3***	14.5**	
Sansei student						
MS	927.2	5,771.5	3,719 6	434 8	181 5	
% variance	11	52	33	3	1	
<i>F</i>		114.2***	94 9***	17 6**	13 0**	
Issei parent						
MS	2,023 0	4,263 2	3,200 5	2,050.3	409.5	
% variance	19	35	26	17	3	
<i>F</i>		62.6***	43 1***	28 0***	21 3**	
Nisei student						
MS	996.0	6,808 1	4,851 6	296 5	332 1	
% variance	9	51	36	2	2	
<i>F</i>		81 6***	54 0***	14 4**	14 6**	

* $p < .05$.** $p < .01$.*** $p < .001$.

ethnic origin, $F = 17.32$; and physical ability, $F = 16.66$). Of the interactions, only groups \times national-ethnic origin was significant ($F = 3.91$, $df = 5$, $p < .01$). However, as reported in detail elsewhere [see Shim (14, Tables 4-7, pp. 31-32)], the main effects of the component were substantially greater than the main effects of groups in each of the four analyses.

In Table 2 mean component scores are presented by parent-student subgroups. According to Duncan's range test, the Caucasian students did not differ significantly from their parents except on understanding. The Sansei (third generation) daughters showed significantly greater acceptance than

TABLE 2
STUDENTS COMPARED WITH THEIR PARENTS ON COMPONENTS OF SOCIAL DISTANCE

Component	Caucasian parent	Caucasian student	Nisei parent	Sansei student	Issei parent	Nisei student
Under-standing	25.93	28.37**	22.39	26.33**	23.88	24.41
Competence	25.91	27.83	22.81	27.17**	24.36	25.13
National-ethnic origin	28.46	30.63	23.45	29.41**	25.00	28.06**
Physical ability	29.28	30.62	25.55	29.83**	26.40	28.01

Note. See Shim (14) for results of analyses of variance and Duncan's multiple range test applied across groups. Each score is derived from all responses to the undesirable component term.

** Mean significantly higher than adjacent mean at .01 level of confidence.

their mothers on all four components. The Nisei (second generation) children differed from their Issei (first generation) parents only on the component of national-ethnic origin. In all instances differences between parents and their children were in the hypothesized direction, even when they did not attain statistical significance.

If comparisons are extended to the three student groups, the Caucasian University of Hawaii students did not differ significantly from the third generation Japanese-American coeds but were significantly more accepting than the Nisei (second generation) students on all components. As for the three sets of parents, the Caucasians expressed significantly less social distance on the four components than the Nisei mothers and also less distance than the Issei on physical ability and national-ethnic origin. On each of the four components the group means fell in the same order of magnitude: Caucasian students, Sansei students, Caucasian parents, Nisei students, Issei parents, Nisei mothers.

TABLE 3
MEAN SOCIAL DISTANCE SCORES OF STUDENTS AND THEIR PARENTS

Stimulus person	Group					
	Caucasian parent (<i>N</i> = 20)	Caucasian student (<i>N</i> = 20)	Nisei parent (<i>N</i> = 20)	Sansei student (<i>N</i> = 20)	Issei parent (<i>N</i> = 20)	Nisei student (<i>N</i> = 20)
Understands others, physically normal, competent, of your own nationality	43.85	42.25	43.55	43.25	43.20	42.30
Understands others, without two legs, competent, of your own nationality	39.40	38.15	36.80	38.85	36.75	37.25
Understands others, physically normal, competent, Negro	37.85	38.55	31.00	38.50**	32.75	38.45 ⁺
Understands others, without two legs, competent, Negro	35.40	36.60	29.35	36.15**	29.95	35.80*
Understands others, physically normal, barely competent, of your own nationality	31.05	31.85	29.70	32.50	30.50	30.85
Understands others, without two legs, barely competent, of your own nationality	29.85	30.15	29.30	31.50	28.10	29.45
Lacks understanding of others, physically normal, competent, of your own nationality	29.60	32.35	27.75	29.35	28.85	28.65
Lacks understanding of others, without two legs, competent, of your own nationality	29.35	31.15	26.40	29.40	26.05	27.50
Lacks understanding of others, physically normal, competent, Negro	27.95	30.90	22.65	29.20**	23.85	27.25
Lacks understanding of others, without two legs, competent, Negro	27.80	30.10	22.80	27.25	24.15	26.20
Understands others, physically normal, barely competent, Negro	26.95	29.65	22.45	29.70**	25.10	28.40
Understands others, without two legs, barely competent, Negro	26.75	28.55	21.50	28.20**	23.10	26.65

TABLE 3 (continued)

Stimulus person	Group					
	Caucasian parent (<i>N</i> = 20)	Caucasian student (<i>N</i> = 20)	Nisei parent (<i>N</i> = 20)	Sansei student (<i>N</i> = 20)	Issei parent (<i>N</i> = 20)	Nisei student (<i>N</i> = 20)
Lacks understanding of others, physically normal, barely competent, of your own nationality	23.95	26.25	21.75	24.65	24.90	22.85
Lacks understanding of others, without two legs, barely competent, of your own nationality	23.75	25.50	19.95	24.50 [*]	22.15	21.10
Lacks understanding of others, physically normal, barely competent, Negro	23.05	25.95	19.50	23.55	20.15	21.65
Lacks understanding of others, without two legs, barely competent, Negro	22.00	24.80	18.35	22.80 [~]	20.95	20.15
Acceptance of others	29.28	31.42 ^{**}	26.42	30.58 ⁺⁺	27.53	29.03 ⁺

* Mean in this cell is significantly higher than adjacent mean at .05 level of confidence

** Mean in this cell is significantly higher than adjacent mean at .01 level of confidence

3. *Stimulus Persons*

Table 3 permits a comparison between students and parents on the mean social distance scores of the 16 stimulus persons. Standard deviations are reported in Shim (14, Table 9, pp. 35-37). In all six groups the person described as one who "understands others, is physically normal, competent, of your own nationality" was most highly accepted; and in five of the six groups the least accepted person was described as one who "lacks understanding of others, is without legs, barely competent, Negro."

The means of the Caucasian parents did not differ significantly from the means of their children on any of the stimulus persons. The Nisei mothers were significantly less accepting than their Sansei daughters on seven stimulus persons. On 14 of 16 stimulus persons the Issei parents did not differ significantly from their children. However, on total acceptance scores, representing average social distance expressed toward all 16 stimulus persons, the students in each of the three subgroups were significantly higher than their parents. As would be expected, the six groups ranked from most to least social distance in the same order as when they were compared on components.

When group means on the 16 stimulus persons were compared for the six groups, rank difference correlations ranged from .92 to .99. That is, the six groups accepted the 16 stimulus persons in highly similar order.

D. DISCUSSION

Before discussing these findings, it is desirable to make explicit here the limits on generalizations. Generalizations about the components of social distance seem reasonably tenable. Generalizations from the second part of the research on group differences in social distance are considered tenable *within* parent-student comparisons. However, interpretations based on comparisons *across* student groups and *across* parent groups must be extended cautiously. Because of the selection procedure in obtaining undergraduate volunteers and young graduates as subjects, the circumstances under which parent *Ss* participated, and the maximization of difference in forming parent groups, the six groups can not be considered representative of other populations.

1. *Components*

As predicted, the four components contributed significantly to social distance but differed in strength. The results seem consistent with the position that social attitudes are multiply determined and, furthermore, that there are individual differences among components in their contributions, as well as individual differences among groups in their responses to components. Not only,

as Triandis and Triandis (17) state, is social distance a complex function of group norms and personality in respondents, but also it is clearly a function of group membership combined with personality attributes in the stimulus person. When the four components are considered in turn, it is perhaps well to bear in mind that each does not in fact occur as an isolated characteristic of a person.

a. Competence. Competence was either the most important or the second most important determinant of social acceptability for all groups. These results concur with those of Dent *et al.* (3), Triandis (16), and Rickard *et al.* (13) in identifying competence as a potent personal characteristic.

b. Understanding. All groups reacted to understanding of others as a powerful determinant of social distance. Stimulus persons who lacked understanding of others but who were physically normal and of the same nationality were not as acceptable as stimulus persons who were understanding but were disabled and Negro. This investigation supports Dent *et al.* (3) who have reported understanding as a major component among undergraduates.

c. National-ethnic origin. In the two Japanese parent groups, national-ethnic origin contributed substantially to expressed social distance; otherwise national-ethnic origin was a significant but relatively weak component. This finding supports the observation that, in general, Hawaii is tolerant in its racial attitudes, but that older Oriental groups represent pockets of ethnocentrism. Harrigan, Dole, and Vinacke (7) and Dent *et al.* (3) have also found that University of Hawaii students tend to accept other ethnic groups. That people with different cultural backgrounds weigh national-ethnic origin differently is supported by Triandis and Triandis' comparison (17) of social distance in Greeks and Americans.

d. Physical ability. Physical ability was either the least important component or about equal in importance to national-ethnic origin in determining social distance. It was, however, a significant contributor to social distance in all analyses. As Rickard *et al.* (13) have shown, disability was a significant determinant of social distance, but not the most powerful component. Inspection of protocols by social distance steps confirmed Siller's (15) finding that disabled persons are acceptable as co-workers but not as marriage partners.

2. Comparison of Groups

a. Parents vs. students. Ethnic background, sex, social status, and economic level were controlled in the comparisons between parents and their children. However, parents differed from their children not only in maturity but also in educational level and, thus, presumably, in speech, custom, beliefs, and other characteristics that may be associated with degree of acculturation.

The most striking finding was that each of the three parent groups ex-

pressed more social distance toward the stimulus persons than did their children. These results agree with those of Plant (12), Siller (15), Triandis (16), and Yucker *et al.* (20) who found that various college age samples were more accepting than mature adults or adolescents. Perhaps exposure to higher education is a major factor in reducing expressed social distance or it may be that those who elect to attend college are likely to accept others. Also, of course, it is well known that college attendance is associated with upward mobility, higher socioeconomic status, and general ability.

An examination of differences by components indicates that the three parent groups varied in the components that distinguished them from their children. On all components, the Nisei mothers, in particular, were markedly less willing to accept others than were their daughters.

b. Student groups. Results of comparisons across student groups are in general agreement with recent studies of Japanese Americans in Hawaii by Arkoff (1), Digman (4), and Lind (9), but less clearly consistent with Harrigan *et al.* (7) and Dent *et al.* (3). As in Arkoff's study of need patterns, response of Sansei (third generation American) students in this research was more like that of the Caucasian sample than was the response of the Nisei (second generation American) students. The Nisei students tended to permit less social distance than the other groups, consistent with Digman's (4) identification of an ethnocentric-authoritarian belief structure in Nisei. Also, Lind (9) has pointed out that, although Japanese in Hawaii have progressively improved their socioeconomic status, they have retained a strong sense of family and racial pride.

In the present study the Caucasian students accepted unfavorable components in others more readily than did the Japanese-American students. In contrast, Harrigan *et al.* (7) found that mainland Caucasian students expressed greater social distance toward others than did University of Hawaii Japanese-American females; and Dent *et al.* (3) established no significant differences on the 3D Scale between Hawaii-born Caucasian students and a Japanese-American sample matched for personal attributes. How might this apparent discrepancy be explained? It seems probable that respondent characteristics other than generation and ethnic origin—e.g., sex, personality structure, residence, educational experience, etc.—must also be associated with acceptance of others by college students.

c. Parent groups. The fact that the Caucasian parent sample was more accepting of others than were the Japanese-American mothers and fathers is consistent with sociological observations (9). However, the slight tendency for the Nisei sample to permit less social distance than the Issei parent group

is contrary to expectations and inconsistent with the comparison between student groups. It is most parsimoniously interpreted as an artifact of sampling procedure. As previously noted, the parent samples were drawn to maximize differences across groups rather than to isolate generation in the United States as an independent variable.

d. All groups. Up to this point the authors have emphasized differences between parents and children, between student groups, and between parent groups. Note, however, that all groups placed the 16 stimulus persons in highly similar order of acceptability. This result is consistent with Katz and Braly's (8) study of social distance in varied samples in different parts of the United States.

3. *Implications*

Do the results have implications for those concerned about increasing acceptance of minority groups? In Hawaii and other relatively tolerant communities, disability or minority group membership may be acceptable in another person if he is perceived as having personal qualities, such as understanding of others and competence in an occupation. Perhaps rehabilitation specialists should deemphasize disability and concentrate on strengthening other personal characteristics in their clients. Similarly, advocates of human rights might profitably encourage minority groups to emphasize their personal assets.

In conclusion, the results of this study confirm aspects of Triandis' multideterminant theory of social distance; they suggest that, in Hawaii's polycultural setting, American education may be acting as a powerful agent of acculturation; and they support positive strategies in increasing the acceptance of ethnic and physically disabled minorities.

E. SUMMARY

This study investigated the extent to which the components of physical ability, understanding, competence, and national-ethnic origin contributed to social distance in Hawaii and compared one Caucasian and two Japanese-American parent groups with their college-student children (total $N = 120$). A multifactor scale was used to measure social distance. Each of the four components was a significant source of variance, with understanding and competence most important for all groups. Students expressed significantly more acceptance of others than did their parents. The results support aspects of Triandis' multideterminant theory and suggest that, in Hawaii's poly-

cultural setting, American education may be acting as a powerful agent of acculturation.

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CONTINUITIES AND DISCONTINUITIES IN ATTITUDES OF THE SAME PERSONS MEASURED THROUGH TIME^{+ 1}

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A. INTRODUCTION

Although research into attitudes has been voluminous in the decades since Thurstone made his first attempt to measure attitudes by the method of equal-appearing intervals, studies of the same persons through time have been few and, where they have been made, they have usually encompassed only a few years. This study examines the attitudes of a group of women measured first when they were undergraduates in the mid-thirties and again in the mid-sixties.

This inquiry poses questions of two particular types: (a) will attitude studies utilizing the Thurstone method of equal-appearing intervals continue to discriminate after the passage of time and will this discrimination be of an order to allow conclusions to be drawn as to the efficacy of such scales as predictive instruments; and (b) if continuities or discontinuities reveal themselves through time, can factors be isolated that will explain, or partially explain, such continuities or discontinuities?

B. METHOD

During the mid-thirties, in connection with an investigation of social stratification in a southern community, a variety of attitude scales were given to students attending what was then Georgia State College for Women. These scales were identified by student names and filed away. Recently, with the cooperation of the alumnae office, approximately 100 subjects were located and were given the same scales in 1965, almost 30 years after having originally done so.

The scales used originally, which dictated their reuse, were those that originated in Chicago under the direction of L. L. Thurstone. Both the scales and the methodology surrounding their construction are well known (11). The

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¹ Based on a paper of the same findings delivered at the April, 1966, meeting of the Southern Sociological Society at New Orleans. The research was made possible by grants from the Kress and Alumni Funds of Clemson University.

scales used were Church, Sunday Observance, Patriotism, War, Law, Birth Control, and the Negro.

Since the records of the scores of these subjects as students were available, a random group of present-day students from classes at Clemson University were chosen and were given the same scales; thus a cross-time comparison of student attitudes was provided. For brevity, the name assigned to the women when they were students is "A35" and the same group in later life is called "A65," while the present-day student group is referred to as "B65."

Early researchers have noted that, while neither grades, intelligence quotients, nor specialized knowledge produces any significant correlations with attitudes, a general "bookishness" or generalized knowledge seems to be present in persons who hold attitudes defined as being less prejudiced toward the Negro, less militantly patriotic, and more liberal in regard to Sunday observance than are the attitudes of persons without these qualities (1, 6, 7, 10).

In an effort to see if this elusive factor of "bookishness" could be captured and used as one factor in a possible explanation of continuities or discontinuities in these studies, a scale of 120 items was constructed. The scale consisted of questions about persons, places, events, and things; and the items were so selected that approximately one-third would most logically be known to Southerners, one-third to Midwesterners, and one-third to persons of any locality who were widely travelled or well read. This gave not only an overall knowledge profile but also enabled a division of the respondents into groups called "locals" and "cosmopolitans," depending upon the type of knowledge held predominantly by the respondent. Thus a person knowing that Carl Sanders was the Governor of Georgia, that John C. Calhoun was from South Carolina, that Elberta is the name of a peach, that Margaret Mitchell wrote *Gone With the Wind*, and Stephen Foster wrote "Camptown Races," but did not know Che Gueverra or what "The Most Exclusive Club in the World" is or that Freud wrote *The Interpretation of Dreams* would be classified as a "local." This scale was called a Provincialism Scale.

Socioeconomic data, such as size of place of residence, education of father and mother, family income, marital status, etc., were obtained for all groups. For comparative purposes the results were divided into married and unmarried, low and high income, low and high scores on the Provincialism scale, locals and cosmopolitans, and a final division between those who most consistently endorsed "liberal" and those who did not.

The Thurstone Scales are arranged in such a way that agreement with each item carries a certain weight, from 0 to 11. Thus, the mean score for any individual can be obtained by adding the weights assigned to those items with

TABLE 1
MEANS AND STANDARD DEVIATIONS FOR COMPARED ATTITUDE GROUPS

[illegible]

TABLE 2
PERCENTAGE AGREEMENTS, SELECTED ITEMS, ATTITUDES TOWARD NEGRO
AND WAR, 1935-1965

	A35	A65	B65	High income		Low income	
Statement	(N = 89)	(N = 97)	(N = 87)	35	65	35	65
<i>War</i>							
Pacifistic							
22.	4	1	1	9	0	0	0
20.	21	0 ^a	0 ^a	33	0	13	0
19.	53	0 ^a	0 ^a	58	0	46	0
2.	78	43	22	66	41	62	47
16.	62	18	15	66	25	53	13
7.	99	99	8	83	100	87	76
Militaristic							
12.	0	6	15	Not compared on other groups			
1.	0 ^a	0 ^a	11				
3.	0 ^a	0 ^a	0 ^a				
21.	5	47	66	9	75	6	34
8.	22	66	53	25	66	20	50
<i>Negro^b</i>							
Nonprejudiced							
8.	8	53	56	7	25	10	50
7.	67	67	48	66	66	55	55
11.	71	6	16	50	0	62	3
12.	16	16	14	7	7	10	10
15.	75	32	23	Not compared on other groups			
Prejudiced							
6.	3	1	6	7	0	10	0
13.	25	1	2	Not enough cases to be compared			
10.	0	0	0	0	0	0	0
16.	11	4	11	7	0	13	3

Note. Statements concerning War are as follows: Pacifistic—22. It is the moral duty of the individual to refuse to fight in any war, no matter the cause; 20. He who refuses to fight is a true hero; 19. We should pledge ourselves never to aid in any future war; 2. War in the modern world is as useless as it is suicidal; 16. It is difficult to imagine a situation in which we would be justified in sanctioning or participating in another war; 7. War brings misery to millions who have no voice in its declaration. Militaristic—12. In the supreme offer of his life on the battlefield a man attains the greatest height of glory; 1. The benefits of war outweigh its attendant evils; 3. War is ennobling and stimulating of our highest and best qualities; 21. Militarism is necessary for the proper defense and protection of the individuals of a country; 8. Because right may be more important than peace, war may be the lesser of two evils. Statements concerning Negro are as follows: Nonprejudiced—8. I believe the Negro is

TABLE 2 (*continued*)

	High scorers		Low scorers		Locals		Cosmopolitans	
	35	65	35	65	35	65	35	65
Statement	(N = 16)		(N = 23)		(N = 14)		(N = 17)	
<i>War</i>								
Pacifistic								
22.	13	6	0	0	0	0	11	0
20.	33	6	8	0	21	0	23	11
19.	53	6	25	0	57	0	59	5
2.	80	53	50	41	54	54	50	53
16.	46	26	50	20	57	14	64	23
7.	100	100	91	84	100	85	100	88
Militaristic								
12.	Not compared							
1.	on other groups							
3.								
21.	0	46	0	66	7	42	0	17
8.	20	73	25	41	14	42	17	64
<i>Negro^b</i>								
Nonprejudiced								
8.	13	63	8	25	13	40	18	76
7.	80	63	50	45	33	40	9	47
11.	73	13	54	8	60	0	79	5
12.	26	13	8	8	6	26	15	15
15.	Not compared							
	on other groups							
Prejudiced								
6.	0	0	4	0	6	0	0	0
13.	Not enough cases							
	to be compared							
10.	0	0	0	4	0	0	0	0
16.	4	0	16	12	20	20	10	4

entitled to the same privileges as the white man; 7. Social recognition should be based on culture without regard for color, 11. The Negro is perfectly capable of taking care of himself, if the white man would leave him alone, 12. Give the Negro a position high in society and he will show himself equal to it; 15. The Negro should not be condemned forever to a lower place than the white man but to a different place. Prejudiced—6. The great majority of Negroes should be treated like well trained apes; 13. The Negro is a necessary evil and must be endured; 10. The feeble-mindedness of the Negro limits him to a social level just a little above that of the higher animals; 16. The instinctive aversion of the white man for the Negro will forever keep the latter far beneath the notice of the former.

^a Actually, one individual in each group endorsed this.

^b In the statements on Negro, for the A35 & A65 group $N = 94$, for the B65 group $N = 86$, and for the Locals $N = 14$.

which he agrees and dividing by the number with which agreement was indicated. This mean will fall on this 0-11 continuum. The mean for any group can be obtained in like manner. The means for all the divisions of the data are shown in Table 1. Each segment of the distribution for each attitude has been assigned an interpretation: thus, a mean near the zero end of the scale would indicate an attitude prejudiced toward the Negro, for example, and a mean score toward the 11 end of the scale would indicate a very nonprejudiced attitude.

While a detailed examination of all the scales might be fruitful, this study

TABLE 3
CORRELATIONS FOR VARIOUS GROUPINGS AS SHOWN FOR EACH ATTITUDE SCALED^a

Attitude	A35 & A65	Provin- cialism & A65	Provin- cialism & B65	Left-right ^b opinion- ation & B65	Dogma- tism ^b & B65
Negro	.675	.260	.113	— .268	— .201
War	.510	.143	.030	.141	.318
Church	.610	.092	.269	—	—
Sunday Observance	.674	— .135	— .293	—	—
Law	.456	.053	.070	—	—
Patriotism	.456	— .083	— .045	—	—
Birth Control	.425	.008	.040	—	—

^a Correlations are Pearson *r*'s.

^b See Rokeach (8, pp. 71-97)

concentrates on two—the attitudes toward War and the Negro. The attitude toward War has received a great deal of critical study and so has the scale on the Negro (2, 4, 5). Additionally, the attitude toward the Negro is so pervasive that no study of attitudes in the South could ignore it. Table 2 presents for each division the percentage agreements with certain selected items from the two scales examined in detail. Table 3 gives the correlations for the different groups examined on each of the attitudes studied.

C. RESULTS AND DISCUSSION

The A35s were highly homogenous: 90 per cent Georgia-born, 95 per cent Protestant, predominantly Baptist, and all white. Seventy-six per cent of their mothers were full-time homemakers, 37 per cent of their fathers had less than an eighth-grade education, and only 10 per cent of the fathers and 12 per cent of the mothers were college graduates. Their mean family income was \$1675.

Whatever else may have happened to the A35s in 30 years, their increased affluence is evident. The A65s live in cities with a median size of 30,000 (the modal city is over 100,000) and they have mean family incomes of \$12,500. Only 37 per cent are full-time homemakers as compared to 76 per cent of their mothers; 62 per cent are in the work force with 54 per cent being professionals of one type or another.

Of the B65s we find that 78 per cent are from South Carolina; the mean city size is 17,000 (modal city is 50,000 or over). The mean family income was \$10,400. Only 12 per cent of the B65 group's fathers have less than an eighth-grade education, compared with 37 per cent of the fathers of the A65 group; 33 per cent of the fathers and 30 per cent of the mothers are college graduates and only 44 per cent are full-time homemakers. The B65s, considered from this standpoint, could well be the children of the A35s, as indeed one of them was.

When one examines Table 3, the correlation between the scores of the A35s and the A65s can be seen. On the two scales we are considering, the correlation of attitude toward War was .510 and on the Negro .675. The correlations for all the attitudes were high. To this extent they reinforce the hypothesis that these Thurstone scales, in spite of the misgivings with which they were first received, can be used with considerable success to predict the continuity of attitudes through time. If the investigation were to be concluded here, it could be said that the attitudes expressed by students in college retain great resilience after 30 years, and that student groups tend to express very similar attitudes at whatever year in time they may be sampled.

However, on any scale of attitudes which uses a continuum of expressions of opinions ranging from strongly favorable to strongly unfavorable, or which uses a 1, 2, 3 degree of agreement or disagreement, there is always a tendency on the part of a respondent to endorse neutral or innocuous positions even though he may also endorse more extreme opinions at either direction from the center. The result, especially through time, is to force the total, or mean, position always toward the center or neutral position. Table 1 illustrates this tendency (3). For this reason the correlations as well as the comparisons of the means may conceal some very real changes. It is quite clear, when we compare the individual responses of the A35s with those of the A65s, that the changes have occurred mostly at each end of the scale spectrum, while the neutral positions continue to receive much the same endorsement.

On the attitude toward War, the A35s had a mean described as "mildly pacifistic," which changed in the A65s to a "neutral" position—the same as that held by the B65s. Table 2 presents on War and the Negro the most

extreme positions at each end of the spectrum of opinions making up each attitude. The difference in the mean between the A35s and the A65s (see Table 1) are small, but both meet statistical significance tests. The most pacifistic statement on the scale, No. 22, "It is the moral duty of an individual to refuse to participate in any war, no matter the cause," was endorsed by 4 per cent of the A35s but by only 1 per cent of both the A65s and the B65s. No. 20, "He who refuses to fight is a true hero," was endorsed by 21 per cent of the A35s, by only one A65, and by no B65. No. 19, "We should pledge ourselves never to aid in any future war," was endorsed by 53 per cent of the A35s, but in 1965 only one A65 and one B65 took this stand. No. 2, "War in the modern world is as useless as it is suicidal," found 78 per cent endorsement by the A35s, but this dropped to 43 per cent in 1965 among the A65s and was endorsed by only 22 per cent of the B65s. Other statements changed as well, always in the direction of a strong diminution in pacifistic endorsements.

The strongest militaristic statement, No. 12, "In the supreme offer of his life on the battlefield a man attains the greatest heights of glory," was endorsed by no A35, but by 6 per cent of the A65s and 15 per cent of the B65s. The same valence holds for other militaristic statements. It is evident that on the extremes of the scale there is a clearcut difference between student attitudes in the thirties and student attitudes as reflected by the B65s in the sixties. It is equally clear that, while the A35s have had their pacifistic opinions eroded through time, they are still more wedded to pacifist attitudes than are the B65s of the succeeding generation.

In constructing the Negro scale the constructors allowed a broad area for designation of "neutral toward the Negro"; and, as a consequence, quite gross changes are reflected in only modest shifts in the means between the thirties and the sixties.

No. 8, considered a key statement in the indication of a nonprejudiced attitude, states "I believe the Negro is entitled to the same social privileges as the white man." In the A35s this was endorsed by only 8 per cent, but the A65s endorsed it by 53 per cent and the B65s by 56 per cent. No. 15, "The Negro should not be forever condemned to a lower place than the white man but to a different place," was endorsed by 76 per cent of the A35s but by only 35 per cent of the A65s and by 23 per cent of the B65s.

Among the prejudiced statements receiving appreciable endorsement, No. 13, "The Negro is a necessary evil and must be endured," found endorsement by 25 per cent of the A35s, by only one individual A65, and by 3 per cent of the B65s. No. 10, "The feeble-mindedness of the Negro will forever keep the latter far beneath the notice of the former," drew an endorsement from the A35s of

11 per cent, from the A65s of 4 per cent, and from the B65s, of 11 per cent.

While extremely prejudiced statements were not widely endorsed in the thirties, are not widely endorsed now by students, and are scarcely endorsed at all by the A65s, there still remain in this relatively well educated, affluent, middle- and upper-middle-class sample evidences of what Tumin found in his North Carolina study to be the "hard core" (12). It is especially true that, by groups of this type, at least, the idea of separation of races as a viable concept has been substantially abandoned. Whether this is an attitude shift or a pragmatic acceptance of a concluded fact may be difficult to judge; but since the scales ask for opinions, it would seem that agreement with the opinion would still be expressed even though compliance was a matter of necessity and not belief (9).

In seeking factors that might explain these continuities and discontinuities, the author made several divisions of the data and attempted several correlational studies. The correlations between the Provincialism scores were quite low, following the disappointing pattern found by others. Additionally, use of two of the Rokeach scales on open and closed minds and left and right orientation did not produce results as encouraging in this study as have been indicated elsewhere (8).

The attitudes of the A35s who never married were, *when students*, somewhat more liberal toward the Negro and somewhat more pacifistic than those who later married, but the difference was not of statistical significance. Using \$20,000 a year family income as "high" and \$10,000 and less as "low," we find that the income groupings did produce some differences. All of the A65s in the high-income group were homemakers, whereas almost 60 per cent of the low-income group worked either full or part time.

On the attitude toward the Negro, the difference in means between the high and low groups was significant at the .05 level, and Table 2 shows that the low-income group exhibits more prejudice toward the Negro than does the high-income group. It is especially interesting to note that the A subjects who made up the low-income group in 1965 were also more prejudiced in their attitude than the A subjects who made up the 1965 high-income group while the entire A group were still students in 1935. On the attitude toward War, the low-income group was more militaristic than the high-income group except for one statement, and this exception is worth noting. No. 21 on the scale is "Militarism is necessary for the proper defense and protection of individuals of our country." On this statement the high-income group, which was consistently less militaristic than the low group on all other statements, moved from a 9 per cent endorsement as students to a 75 per cent endorsement

in 1965, while the low group moved from a 6 per cent endorsement as students to only a 3+ per cent endorsement. Could it be that people who have high incomes, with extensive goods and services at their command, see the word "protection" in this item as being of particular importance to them and feel much more strongly about this protection than do people of the low-income group?

The mean for the A group on the Provincialism scale was 55. In the high group were placed all scoring 75 and up, and in the low group all scoring 45 or below. On the attitude toward the Negro the low group had a mean of 5.2 in both the thirties and sixties, while the mean of the high group changed from 6.2 to 6.6. The difference between the mean of the low group and that of the high is statistically significant at the .05 level. On the individual statements as shown in Table 2 the High Scorers consistently endorsed the non-prejudiced statements by greater percentages than did the Low Scorers. Put another way, although both groups tended to shift from more to less prejudiced statements through time, the rate of change to less prejudiced statements was more pronounced among those who scored high on the Provincialism scale.

On the division into Locals and Cosmopolitans on the basis of the type question answered on the Provincialism scale, the general pattern can be seen from the tables. The same general trend as on the overall scale prevailed. The Locals started as more prejudiced than the Cosmopolitans, and while they became decreasingly prejudiced with the passage of time they did not move far toward nonprejudiced positions, so that in the 30-year period the Locals moved on the prejudice scale to approximately the position at which the Cosmopolitans began.

A contrast was made by selecting out those individual A group members who had changed most toward increasingly liberal attitudes during the time span, and those who had changed most in the opposite direction. Only on the Provincialism scale did any significant difference emerge. The mean score for those who had changed most toward the liberal point of view was 68; and for those who had become decreasingly liberal it was 47. It would appear that those who changed the most through time in the direction of less prejudiced and less militaristic statements score higher on knowledge scales than those who changed most in the opposite direction.

D. CONCLUSIONS

The first question posed by this study: namely, Will attitude scales of the Thurstone type of equal-appearing intervals continue to discriminate over a

time continuum and can they be utilized for predictive purposes seems to be answered in the affirmative. Whatever it was that attitude scales measured 30 years ago, they still do. The changes occurred in an orderly manner, and conclusions as to the future attitudes of college students based on samples utilizing this technique would seem to be possible and to be productive of high correlations. The attitudes developed by the time that college has been reached have a great resistance to the erosion of time. Criticism of the scale on the ground that it makes broad discriminations on general attitudes, but allows so many levels to exist as to make them classifiable as general sentiments, also seem to be valid, especially on attitudes such as War.

The second question involving the identification of factors to account for these continuities and discontinuities through time is not clearly answered. Correlations of any of these specific conditions, such as knowledge, produce statistical evidence that is murky at best. Yet it remains true that, on specific statements, general and broad knowledge—bookishness, if you will—still associate with low prejudice and, in general, with what are thought to be tolerant, urbane, and civilized positions.

The two attitudes abstracted for detailed examination show change over time. The attitude toward War shows a shift from a pacifistic to a militaristic position, and the shift on attitude toward the Negro has been toward a decreasingly prejudiced position. Both of these shifts reflect the substantial social pressures in those directions through a 30-year span. That such change is individual in nature and that it is by no means uniform are clear. Conditions, education, and propaganda produce group shifts in attitudes; but, clearly, such shifts must be supported by complex individual experiences; otherwise the early attitude persists.

E. SUMMARY

The Thurstone attitude scales on Negro, War, Patriotism, Church, Sunday Observance, Law, and Birth Control were given in 1965 to a group of the same persons who took the scales in 1935. High correlations were obtained through the 30-year time gap. The attitudes toward War and the Negro are given special attention; and, while the scales are dependable as predictive instruments through time, some significant differences appear. These differences in means on some scales are statistically significant, and on some items the changes have been gross. Efforts to establish causal relationships to knowledge, certain socioeconomic criteria, and "provincialism" produced mixed results although permitting of tentative conclusions.

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SMOKING AND MMPI SCORES AMONG ENTERING FRESHMEN*¹

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A. INTRODUCTION

Since roughly half of all adult Americans smoke cigarettes on a regular basis, it should not be expected that smokers will differ greatly from nonsmokers on psychological or personality characteristics. However, the Minnesota Multiphasic Personality Inventory (MMPI) has been used in several attempts to establish differences between smokers and nonsmokers. Schubert (8), for example, found significantly higher Ma (Hypomania) and lower Si (Social introversion) scores among smokers than among nonsmokers, and more recently (9) reported significant differences on Ma and Si scores for two additional samples. Smokers were significantly lower than nonsmokers on L scores in the two more recent samples, and higher than nonsmokers on Pd (Psychopathic deviance) in one of the two samples.

McDonald (6), seeking relationships between smoking, MMPI scores, and obstetric complications, presents data showing no relationships for obstetric complications and curvilinear associations between the smoking and personality variables. That is, trichotomizing his sample of 124 first-pregnancy cases into nonsmokers, light smokers (up to a half-pack a day), and heavy smokers, McDonald found that MMPI D (Depression) and Pd scores were (linearly) higher for smokers than for nonsmokers; that lighter smokers scored lower than either nonsmokers or heavy smokers on Pt (Psychasthenia) scores and on Sc (Schizophrenia) scores; and that nonsmokers and light smokers scored higher than heavy smokers on Hy (Hysteria) scores.

Since most of the studies to this point have depended on relatively small sample sizes, an analysis was undertaken based on data from 1851 males and 1815 females, for whom all data were available, from the 1964 entering

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freshman class at the University of Wisconsin. This represents 81.7 per cent of males and 88.5 per cent of females in the class. The question on smoking was "Do you smoke cigarettes?" The response categories were "No, never"; "Occasionally"; and "Regularly."

B. RESULTS

The mean MMPI scores by sex and smoker status on the trichotomized self-report smoking measure are presented in Table 1, along with the corresponding r . With these sample sizes the correlation coefficients would reach statistical significance at the .05 level for a symmetric test with $r \geq .048$, and r 's of this magnitude or larger are asterisked in the table. The tabulated data show support for the previously mentioned findings of Schubert, in that smokers are higher on Pd and Ma and lower on Si and L than are non-smokers. Depression (D) apparently is unrelated to smoking in these samples; this lack of representation may mean that McDonald's sample of unmarried obstetric cases showed a select response. Similarly, McDonald's curvilinear findings are not replicated for either sex in the present study. The smoking variable is significantly related to the F (validity) score. Low correlations were found for Hy (Hysteria), Sc (Schizophrenia), in the case of males on Hs (Hypochondriasis), and for Mf (Interest) and K score in the case of females.

C. CONCLUSIONS

Since these are newly reported findings, they should be treated as suggestive. Based on the MMPI (1), however, the replicated findings suggest some tendency on the part of smokers to be extroverted and hypomanic, which is consistent also with findings based on the use of other personality measures (2, 3, 4). The positive relationship between smoking and the Psychopathic Deviate scale suggests some maladjustment that is reflected also in the relationships of smoking to L, F, and the Hysteria and Schizophrenia scales. These findings appear to be consistent with those additional reports based on the use of other personality measures (5, 7).

D. SUMMARY

MMPI data for 1851 male and 1815 female freshmen gathered at entry into the University of Wisconsin were correlated and tabulated on whether the respondents smoked cigarettes not at all, frequently, or regularly. Significant differences lent support to prior reports that smokers are higher on Pd and Ma and lower on Si and L than are nonsmokers: i.e., the smokers tend to be

TABLE 1
MMPI CORRELATES OF SMOKING BEHAVIOR (ENTERING FRESHMEN, CLASS OF 1968)

Scale	Do you smoke cigarettes?				Females (N = 1815)			
	Males (N = 1851)							
	Never	Occa- sionally	Regu- larly		Never	Occa- sionally	Regu- larly	
Hypochondriasis (Hs)	12.4	12.8	13.1	.06*	13.3	13.5	13.4	.01
Depression (D)	19.5	19.3	19.2	-.02	21.0	21.1	20.4	-.02
Hysteria (Hy)	19.9	20.0	21.0	.07*	21.7	22.2	22.1	.05*
Psychopathic Deviate (Pd)	21.9	22.9	24.6	.18**	21.1	22.1	22.6	.13**
Interest (Mf)	25.9	25.7	26.7	.04	37.7	37.3	36.6	-.07*
Paranoia (Pa)	10.0	9.9	10.1	.00	9.9	10.2	9.9	.03
Psychasthenia (Pt)	27.4	28.0	27.1	.00	28.7	29.2	28.4	.00
Schizophrenia (Sc)	27.4	27.6	28.4	.05*	26.9	27.9	27.6	.06*
Hypomania (Ma)	20.2	21.1	22.3	.15**	19.8	21.1	21.8	.18**
Social IE. (Si)	28.1	26.1	25.0	-.12**	27.8	25.5	24.1	-.15**
Question (?)	2.8	2.9	3.5	.03	3.1	3.0	4.7	.04
Lie (L)	3.3	3.0	2.8	-.10**	3.6	3.2	3.2	-.10**
Validity (F)	5.0	5.4	6.6	.13*	4.0	4.6	5.0	.11*
K Score (K)	14.1	14.1	13.6	-.03	14.8	14.1	13.9	-.08*

* Significant at .05 level by symmetric test.

** Replications from earlier studies

more extroverted and hypomanic than do nonsmokers. Additional differences are reported.

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Perception of the vertical as a function of affective stimuli and extraneous stimulation in schizophrenic and normal subjects—J. O. WELLS AND W. E. CALDWELL
Mid life attainment of the mentally retarded: A longitudinal study—W. R. BALLER, D. C. CHARLES, AND E. L. MILLER

VOLUME 76—July-December, 1967

- Scalogram analysis of some developmental sequences of infant behavior as measured by the Bayley Infant Scale of Mental Development—R. KOHEN-RAZ
The leader and the lost: A case study of indigenous leadership in a poverty program Community Action Committee—L. A. ZURCHER
A developmental study of the perception of people—R. N. WOLMAN
Human fears: A factor analytic study of three age levels—G. W. RUSSELL
- Correlates of voluntary social participation—J. E. TEELE
Personality characteristics and life history of creative college women—R. HELSON
A systematic study of learning and utilization in nursing homes—B. A. STOTSKY

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DECEMBER, 1967

(Manuscripts are printed in the order of final acceptance)

- Comparison of personality characteristics of junior high students from American Indian, Mexican, and Caucasian ethnic backgrounds 145
BY EVELYN P. MASON
- Immediate *vs.* delayed reward among Arnhem-Land aborigines 157
BY KENNETH H. DAVID AND STEPHEN BOCHNER
- An experimental study of prediction among Ghanaian children 161
BY A. C. MUNDY-CASTLE
- Social change and sexual behavior of Arab university students 169
BY LEVON H. MELIKIAN
- An experimental evaluation of Heider's Balance Theory with respect to situational and predispositional variables 177
BY HERBERT HARARI

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Negative responses and serial position effects on the Adjective Check List	191
By PETER B. WARR AND CHRIS KNAPPER	
Some effects of discrepancy level on relationships between authoritarianism and conformity	199
By HOMER H. JOHNSON AND IVAN D. STEINER	
Dogmatism, future orientation, and perception of time	205
By LOUIS A. ZURCHER, JR., JOE E. WILLIS, FREDERICK F. IKARD, AND JOHN A. DOHME	
Individual differences in responses to the Semantic Differential	211
By WALTER H. CROCKETT AND LOUIS J. NIDORF	
Predicting self-assessed social leadership in a new culture with the MMPI	219
By JOSE ARMILLA	
Some effects of victory or defeat upon perception of political candidates	227
By LYNN R. ANDERSON AND ALAN R. BASS	
The influence of patterns of conformity and general reasoning ability on subjects' responses to an inconclusive message: A preliminary study	241
By ROBERT S. ALBERT	
Comparison of typical peer, self, and ideal percepts related to college achievement	253
By BERNARD GUERNEY, JR., AND JEAN L. BURTON	
A study of empirically derived values	261
By LEON GORLOW AND GARY A. NOLL	
Attitudinal change toward Negroes and school desegregation among participants in a summer training institute	271
By BERNARD C. KINNICK AND STANTON D. PLATTOR	
The learning of congruent and noncongruent social structures	285
By DONALD L. MOSHER	
BOOKS RECENTLY RECEIVED	291

COMPARISON OF PERSONALITY CHARACTERISTICS OF JUNIOR HIGH STUDENTS FROM AMERICAN INDIAN, MEXICAN, AND CAUCASIAN ETHNIC BACKGROUNDS*

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EVELYN P. MASON¹

A. PROBLEM

In the northwest corner of Washington State, which houses the reservations of the Lummi, Nooksack, Swinomish, and Skagit American Indian tribes, it is well established that few adolescents from these ethnic backgrounds complete high school. Further, with the growing migratory farm population this plight is reoccurring among the Mexican Americans. National recognition of the relationship between socioeconomic disadvantage and academic failure has stimulated federal programs for those beginning (Head Start) or completing (Upward Bound) formal schooling, but little has been done for those in the middle school years. Project Catch-Up is just such a program.² The program provides area-representative, culturally disadvantaged, 13- and 14-year-olds with a six-week summer residence program of academic remediation and acceleration and general cultural enrichment.

While Catch-Up is primarily a demonstration project, the ultimate success of which must await future evaluation, some measures were obtained of present personality characteristics. Because the relationship of race, ethnicity, and achievement motivation is well documented (9, 10) and evidence is available that the "folk concepts" measured by the California Psychological Inventory, CPI (3), are significantly related to academic success (2, 5, 6, 7), the CPI was used to measure project participants' attitudes toward themselves and to evaluate differential responses to the project and subsequent reactions to school experiences. Folk concepts, as defined by Gough (3), are those variables arising directly out of interpersonal living that are considered culturally universal. The CPI provides measures of a selected number of those concepts judged to

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² Project Catch-Up, initiated at Western Washington State College in 1966, is supported primarily by a grant from Rockefeller Foundation.

be important determiners of positive, socially constructive behavior. Scores from true-false responses to the 480 statements of the inventory yield 18 scales. These 18 measures are dominance, capacity for status, sociability, social presence, self-acceptance, sense of well-being, responsibility, socialization, self-control, tolerance, good impression, communality, achievement via conform-ance, achievement via independence, intellectual efficiency, psychological mindedness, flexibility, and femininity. The present study presents a comparative analysis of responses to this one instrument; essentially, it is both a construct validation study of the experimental instrument for use with this age group and a descriptive analysis of ethnic differences.

B. METHOD

From more than 200 referrals from the junior high schools in northwest Washington, one hundred 13- and 14-year-old students were selected who best met the criteria of teacher judgment of good academic potential, achievement below expected ability, evidence of sociocultural deprivation, and no evidence of serious emotional problem. From the 100 students selected, 50 were randomly assigned to the participant group and 50 to a control group. Of the 50 assigned to the participant group, 49 completed the program. The students completing the CPI, then, included 26 American Indians (13 boys and 13 girls), 10 Mexican Americans (five boys and five girls), and 13 Caucasians³ (six boys and seven girls).

The 18 measures of the CPI represent "folk concepts" or dimensions of personality arising out of social living which have cross-cultural validity (4). Though the normative sample for this instrument includes junior high students (3), the limited verbal facility of the present population necessitated modification of the usual administration. With the author's permission the test was administered in six separate sessions, allowing time for completion and opportunity for assistance with unfamiliar vocabulary.

C. RESULTS

Statistical analysis of the total responses to the CPI by three-factor mixed analysis of variance with one repeated measure (8, p. 281 *ff.*) showed no significant overall sex effect, no overall ethnic effect, and no overall sex by ethnic group interaction. However, significant differences were found across

³ Caucasian as it is used in this context refers to those students who could not be identified with either the disadvantaged American-Indian or Mexican-American groups.

the 18 subtests ($p < .001$), across the tests by sex ($p < .002$), across tests by ethnic group ($p < .005$), and across tests by sex and ethnic group ($p < .001$).

The significant triple interaction of sex by ethnic group by tests indicated that further analyses would provide useful information. Three two-variable analyses were run, one for each ethnic group, in order to determine the sources of the sex by test interaction. Then two more two-variable analyses were made, one for each sex, to determine the sources of the ethnic groups by tests interaction (8, p. 267 ff.). The most obvious finding was that the mean scores on the 18 tests differed in all five analyses ($p < .001$). The second major result was an interaction between ethnic groups and tests for the males ($p < .01$). This significantly different male ethnic group response to the subtests of the scale is illustrated in Figure 1. The Caucasian males' mean scores were higher on the subtests of social presence and flexibility; while the mean scores for the Mexican males were higher on the subtests of responsibility, socialization, self-control, tolerance, good impression, communality, achievement via conformity, and intellectual efficiency. Noticeable were the lower mean scores for the Indian males on the subtests of sense of well-being and intellectual efficiency.

The third result from these two-variable analyses was that the mean ethnic group scores over all 18 tests were different for females ($p < .025$). Attention to Figure 2 indicates that the consistent pattern of response across the tests was for the Mexican female to score the lowest, the Indian female slightly higher, while the Caucasian female had the highest scores (mean scores for the 18 subtests were Mexican, 32.38; Indian, 34.16; and Caucasian, 40.07). Noticeable were the low mean scores for all three groups on the subtests of capacity for status, feeling of well-being, tolerance, and intellectual efficiency.

To find specifically the source of the interaction between the sexes and ethnic groups for the various tests, 18 two-variable factorial analyses of variance were run. Ten significant differences were found, indicating that eight of the subtests differentiated significantly. These subtests were social presence, sense of well-being, socialization, tolerance, intellectual efficiency, psychological mindedness, flexibility, and femininity. Only two of the differences showed significant sex by ethnic group interaction: tolerance ($p < .025$) and intellectual efficiency ($p < .05$). Figures 3 and 4 illustrate this interaction. The four significantly different ethnic responses were to social presence ($p < .025$), psychological mindedness ($p < .01$), flexibility ($p < .001$), and

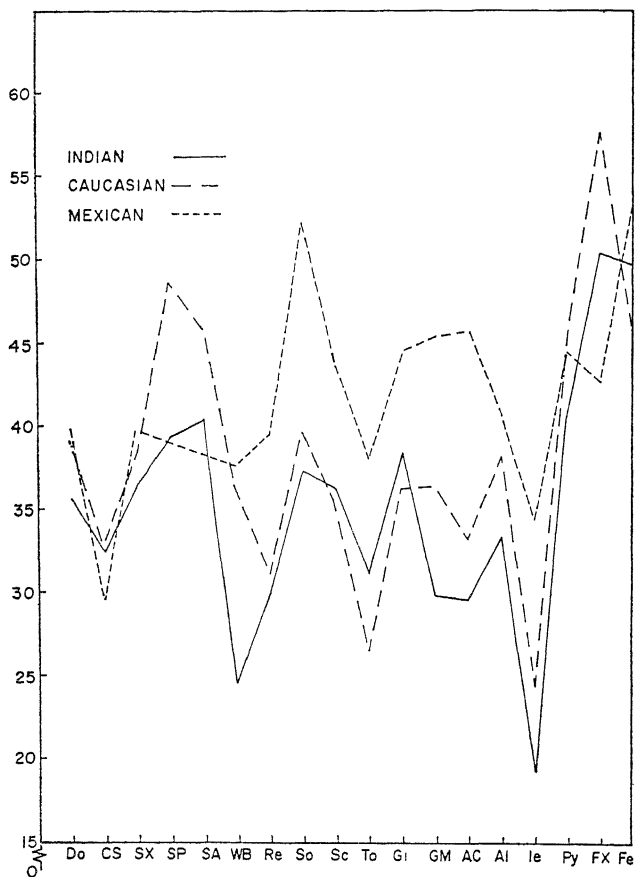


FIGURE 1
MEAN STANDARD SCORES ON THE CALIFORNIA PSYCHOLOGICAL INVENTORY FOR
MALE AMERICAN INDIAN, CAUCASIAN, AND MEXICAN JUNIOR HIGH STUDENTS

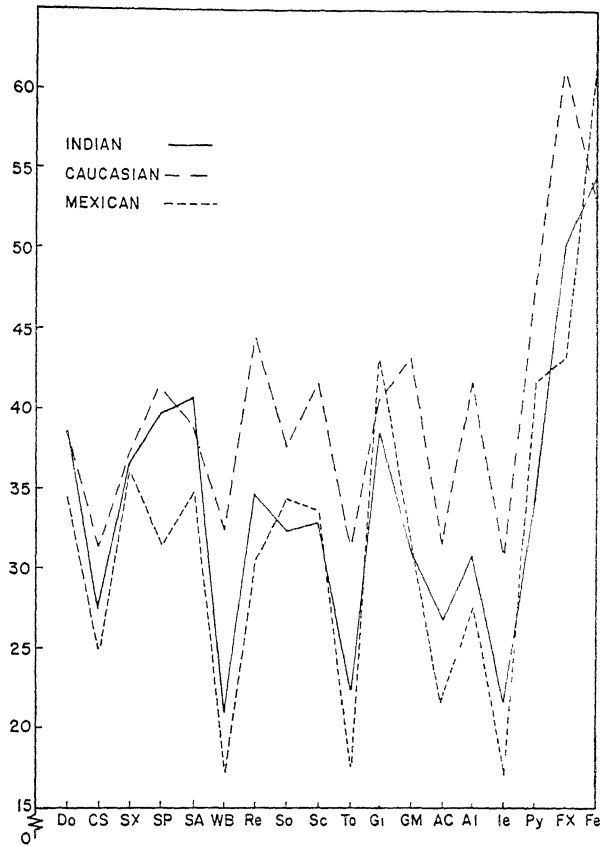


FIGURE 2
MEAN STANDARD SCORES ON THE CALIFORNIA PSYCHOLOGICAL INVENTORY FOR
FEMALE AMERICAN INDIAN, CAUCASIAN, AND MEXICAN JUNIOR HIGH STUDENTS

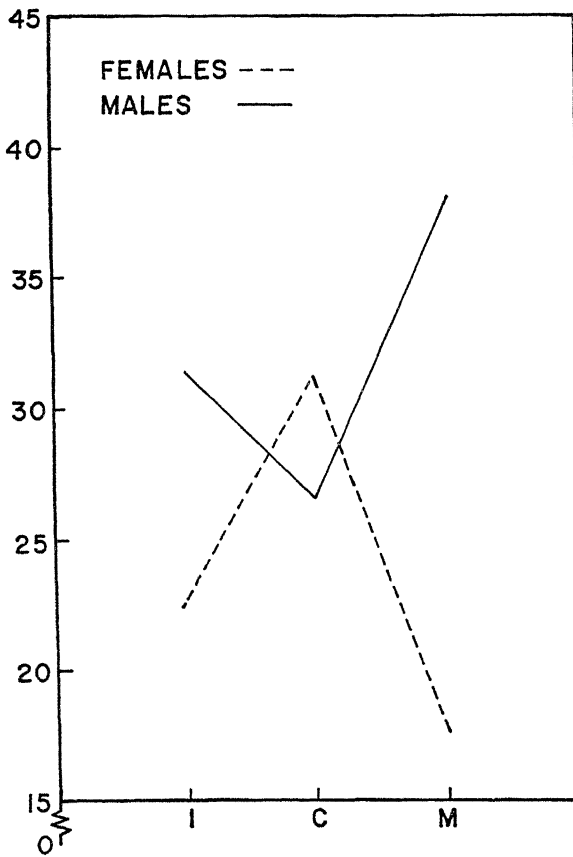


FIGURE 3
MEAN SCORES BY SEX AND ETHNIC GROUP FOR AMERICAN INDIAN, CAUCASIAN, AND
MEXICAN JUNIOR HIGH STUDENTS ON THE CPI SUBTEST OF TOLERANCE

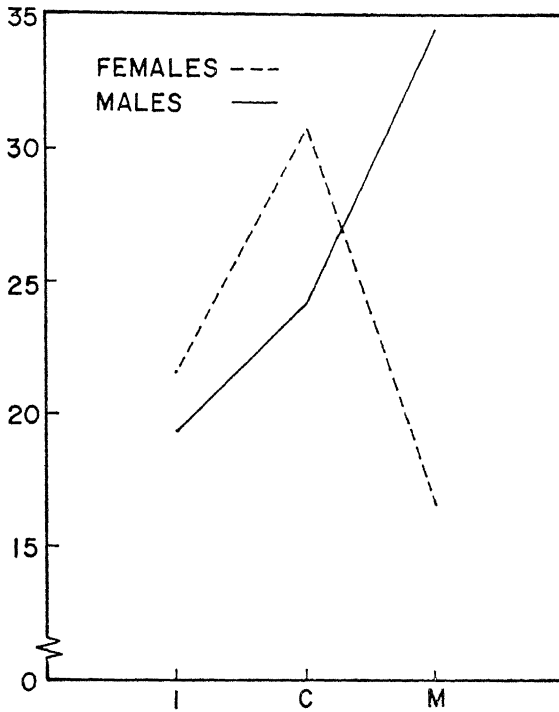


FIGURE 4

MEAN SCORES BY SEX AND ETHNIC GROUP FOR AMERICAN INDIAN, CAUCASIAN, AND MEXICAN JUNIOR HIGH STUDENTS ON THE CPI SUBTEST OF INTELLECTUAL EFFICIENCY

femininity ($p < .05$). The four significantly different sex responses were to sense of well-being ($p < .05$), socialization ($p < .025$), tolerance ($p < .025$), and femininity ($p < .025$).

Duncan's range test (1) was used for comparisons of individual mean differences. Nine such comparisons were made on the eight subtests, found to discriminate significantly, totalling 72 comparisons. The nine comparisons made were (a) Indian-Caucasian males, (b) Indian-Mexican males, (c) Caucasian-Mexican males, (d) Indian-Caucasian females, (e) Indian-Mexican females, (f) Caucasian-Mexican females, (g) Indian males-females, (h) Caucasian males-females, and (i) Mexican males-females.

Fifteen of these 72 comparisons were significant at the .05 level. Of these, five showed ethnic differences between males, five were ethnic differences between females, and five were sex differences within the three ethnic groups. The four subtests of socialization, tolerance, psychological mindedness, and

flexibility had three significant differences. The subtests of social presence, sense of well-being, and intellectual efficiency had one significant difference. No significant differences were found for femininity.

The three significantly different responses to socialization were by Indian-Mexican males, Caucasian-Mexican males, and Mexican males-females. On this subtest the female responses were relatively homogeneous (mean standard scores were Indian, 32.92; Caucasian, 39.83; Mexican, 33.80). The differential male responses placed the Mexican males significantly higher than the Caucasian or Indian males (mean standard scores were 43.60, 36.38, and 35.71). Further, the Mexican male was also appreciably higher than his female counterpart (43.60 and 33.80).

The subtest measuring tolerance differentiated significantly between the Caucasian-Mexican female, Indian male-female, and Mexican male-female. On this scale the males were relatively more homogeneous in their responses, while the female responses placed them in a hierarchy with the Caucasian high in tolerance and the Mexican low (31.14, 22.46, and 17.80). The Mexican male, again, is significantly higher than the female (38.00 and 17.80) and the Indian male is higher than the female (31.38 and 22.46).

With regard to psychological mindedness, the differences found were Indian-Caucasian females, Indian-Mexican females, and Indian male-female. The males were more homogeneous in their responses, but the females this time showed a dichotomous response pattern with Indian females low (34.08) and Caucasian and Mexican females high (47.00 and 41.60). The Indian male was significantly higher than the Indian female (40.15 and 34.08).

The significant differences for flexibility were Caucasian-Mexican males, Indian-Caucasian females, and Caucasian-Mexican females. The females were on a continuum with Caucasians high and Mexicans low (61.14, 50.38, and 43.20). The males, also, followed a similar pattern with Caucasians high and Mexicans low (57.71, 50.23, and 42.80).

The one significant difference in response to social presence was between Indian and Caucasian males, placing them in a rather skewed hierarchy with Caucasians high and Indians and Mexicans low (48.57, 39.46, and 39.00). For sense of well-being, the significant difference was between the Mexican males and females (37.80 and 17.20). For intellectual efficiency, the significant difference was between Indian-Mexican males, placing the males on a continuum with Mexicans high and Indians low (34.60, 24.14, and 19.31).

These last comparisons indicate that of the five ethnic differences, four involved Mexican males, and on three the Mexican had the higher score. The Mexican females, on the other hand, were involved in four of the five

differences found among females across ethnic groups, and on three the Mexican had the lower score. Three of the sex differences were between Mexican males and females. On all three the Mexican male had the higher score.

D. DISCUSSION

Despite difficulties in administering a 480-item test to junior high students with limited verbal ability, the differential response of the Catch-Up youngsters to the CPI attests to the usefulness of the instrument in measuring cultural-ethnic differences. Because of the frustrations exhibited during the administration, however, some question is raised as to whether the test should be recommended for general use with this age group particularly if the group represents a disadvantaged cultural background. Certainly, if the test is used, ample opportunity for questioning to clarify meaning is a necessary requirement. For example, one Mexican girl initially responded to the item, "I think Lincoln was greater than Washington," by stating that she could not answer because she had never been there!

Nevertheless, the highly significant sex and ethnic group differences measured by the test did provide additional information about problems these young people are facing. Of particular interest was the evidence that females, though evidencing specific ethnic differences ordered with the Mexican lowest and the Caucasian highest, showed a consistent pattern of response across the 18 subtests; this finding pointed to a more homogeneous female response, which was suggestive of a generalized lower socioeconomic attitude. Moreover, the female responses emphasized more negative and poorly motivated attitudes. Project Catch-Up staff members did find the girls more difficult and much more resistant to change. Seemingly because of their earlier maturing, they had accepted their role in life with greater passivity and with little expectation for change. An example of this was one girl's English theme which began in response to the question, "Twenty years from now . . ." with, "I'll probably have 10 children, though I only want three."

The ethnic group differences for males across the 18 subtests showed the Mexican and Indian males to have lower social presence than the Caucasian. Further, flexibility measures for the Mexican male were lower than for either the Caucasian or Indian. However, the Mexican males showed significantly greater social responsibility, tolerance, and intellectual efficiency. These findings were supported by behavioral observations of the project participants. All the Mexican youngsters came from intact homes. Even though extreme financial deprivation existed in many cases, strong family loyalties were

universal within a predominantly patriarchal family organization. Further, in many of the Mexican families, the conviction was voiced that the future economic security of the family would depend upon the success of the son, a condition which leads to preferential treatment for boys.

In contrast to the Mexican families, the considerable family disorganization found in both the Caucasian and Indian groups seemed related to their lower scores on social maturity and motivation for intellectual achievement. Particularly noticeable were the responses of the American Indian. Not only was this group exposed to the debilitating effects of family disorganization with only weak ties to fading tribal organization, but these young people had also to learn to handle strong local prejudicial attitudes. It seemed no wonder that by the early teens the American Indian boy sees himself as relatively less responsible socially and lacking in intellectual motivations.

If these results were used to design the educational program which would be maximally effective in accelerating academic achievement in the culturally disadvantaged teenager, the results would strongly support the assumption that the participant group should be predominantly male with a majority of Mexican Americans. Indeed, by the end of the summer the rather frazzled staff would have welcomed such a participant group! What in actuality the results of the study clearly illustrate is that cultural disadvantage (for whatever worth exists in the term) has differential effects both in relationship to the sex of the recipient and to his ethnic group. The passive acquiescence of the teenage girl to the all pervasive effects of deprivation is an area of study which warrants further attention. Further, the American Indian's plight is unique. We have but scratched the surface.

E. SUMMARY

The California Psychological Inventory was administered to 49 culturally disadvantaged junior high students participating in a summer educational enrichment program. The participant group included 26 American Indians (13 boys and 13 girls), 13 Caucasians (6 boys and 7 girls), and 10 Mexican Americans (5 boys and 5 girls). Statistical analyses of the test results showed that females, though evidencing specific ethnic differences ordered with the Mexican lowest and the Caucasian highest, responded in a consistent negative pattern across the 18 subtests. Ethnic group differences for males indicated that the Mexican and Indian had lower social presence than the Caucasian. Further, flexibility scores for the Mexican male were lower than for the Caucasian or Indian, but higher on social responsibility, tolerance, and intellectual efficiency.

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IMMEDIATE VS. DELAYED REWARD AMONG ARNHEM- LAND ABORIGINES^{*}

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A. INTRODUCTION

The choice of a person to delay the immediate gratification of a need has played a central role in Freud's (2) theory of child development. Present-day investigators have used a procedure to study immediate gratification whereby Ss are given a choice between an immediate-smaller reward *vs.* a larger-delayed reward. Mischel (6, 7) found that preference for delayed reward (DR) was positively related to social achievement, "naysaying," presence of father in the home, age, social responsibility, accuracy in time concepts and time perspective, and need achievement. Also, a positive relationship was found with intelligence (3, 8) and low need for social desirability (4).

People who live in an industrialized culture learn to delay gratification at an early age (3, 5, 8). However, in contrast to the western emphasis upon delayed rewards, it appears as though the Aboriginal culture may encourage immediate reward (IR) behavior. Elkin (1) has studied the Australian Aborigines for many years, and he describes them as leading a nomadic, food-gathering, and hunting existence. Elkin believes that the Aborigines' concept of time is a reflection of the food-gathering life. The Aborigine does not grow or expect to find new or better varieties of yams or edible seeds, or to breed better wallabies. His survival depends on the seasons, the growth of yams in the usual places, and the increase of wallabies in their regular time and place. It is the "concrete reality" of the present which has relevance. Food and social relations of the present are his social concern, and timetables are not definitive. Time, as a series of periods, seems unimportant to the Aborigine. If an Aborigine is asked how long it will take to go to a place he knows, he might answer: "Might be little bit long time." The way of life and beliefs of the Aborigine appear to be drastically different from those of western culture, which suggests that the Aborigine may respond differently to a IR *vs.* DR situation.

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B. METHOD

Ss were 46 Aboriginal school children, ranging in age from 6-11 years. They lived in Maningrida, an Aboriginal Settlement which is located about 200 miles east of Darwin, Arnhem-Land, Northern Territory.

The procedure was based upon that used by Kainer (3), in which she found that among 50 middle-class kindergarten and first-grade children, DR Ss scored significantly higher on the Porteus Maze test than IR Ss. The similarity of procedures would allow, hopefully, for a direct comparison between the Aborigine children and the western-culture children.

Pieces of hard candy were used for the reward in a IR *vs.* DR two-choice situation. *E* gave *S* the choice of taking one piece of candy immediately or two pieces of candy "after we have finished the game." After *S* made his choice, the Porteus Maze Test was administered. *E*'s choice of candy as the reward was based upon the unanimous agreement among the staff members of the settlement that candy was a very potent reward for the children, which was confirmed by *E* when he was constantly followed by the children after the experiment was terminated.

C. RESULTS AND DISCUSSION

Eighteen Ss chose IR and 28 Ss chose DR. There was no significant difference between IR ($M = 95.89$, $SD = 14.87$) and DR ($M = 101.54$, $SD = 17.99$) for the Test Quotient scores of the Maze Test ($t = 1.13$, $df = 44$, $p > .05$).

The number of Ss that chose DR *vs.* IR at each age was Age 6 = one DR, four IR; Age 7 = eight DR, five IR; Age 8 = six DR, three IR; Age 9 = eight DR, two IR; Age 10 = four DR, four IR; Age 11 = one DR, zero IR. Ss were divided into two age groups, 6-7 years and 8-11 years. The 6-7-year group had nine IR Ss and nine DR Ss, and the 8-11-year group had nine IR Ss and nineteen DR Ss. There was no significant difference between IR and DR for the two age groups ($\chi^2 = 3.57$, $df = 1$, $p > .05$).

Although there was a tendency for the older Ss to choose the delayed reward, there was no significant difference between age groups. This congruence of choice between age groups indicates that one-half of Ss chose the delayed reward, the other half chose the immediate reward, irrespective of their ages. This is in contrast to western culture, where children learn at an early age to choose a larger delayed reward over a smaller immediate reward. For example, Kainer (3) used an almost identical procedure as that used in the present experiment, and she reported that among children tested from middle-class

suburban New York City schools no child below age 5 chose DR ($N = 8$), no matter how many pieces of reward were offered, or how brief the necessary period of delay; above the age of $7\frac{1}{2}$ all the children chose DR ($N = 7$). Between the ages of $5\frac{1}{2}$ -7, Kainer found that IR Ss scored significantly lower than DR Ss on the Maze, which was interpreted as resulting from IR Ss' inaccurate comprehension about the reality of the testing situation and misunderstanding of the DR vs. IR choice dichotomy. A tentative explanation could be related to the Aborigines' concept of time, in which he emphasizes the present and conceives of time in a highly fluid manner. Mischel (7), Mischel & Metzner (8), and Shybut (9) reported that accuracy of time perspective was positively related to delayed reward. This suggests that the older Aborigine children did not prefer the delayed reward because of their inaccuracy of time perspective.

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AN EXPERIMENTAL STUDY OF PREDICTION AMONG GHANAIAIAN CHILDREN*¹

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Sciences, Accra, Africa*

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A. INTRODUCTION

Successful prediction involves the appropriate utilization of past information in conjunction with present, this operation being a critical factor in adaptive behavior. An understanding of the development and nature of predictive functions will therefore be of value not only for psychologists and educationists generally but also for the elucidation of behavior in which prediction has apparently failed or not occurred. For example, it would be useful to know the extent to which road and other accidents are attributable to deficiencies in predictive functions.

The present experiment was designed to investigate the way in which Ghanaian children aged between 5 and 10 years deal with a problem requiring prediction for its solution.

B. METHOD

The subjects were 115 children drawn in approximately equal numbers from the following centers in Southern Ghana, predominant tribe in each center being shown in parentheses: James Town (Ga), Koforidua (Ashanti-Twi), Sokode Etoe (Ewe), and Anfoega Agatanyigbe (Ewe). There were 37 children aged 5-6 years, 38 aged 7-8 years, and 40 aged 9-10 years. Instructions were given in the vernacular.

The experiment involved the serial presentation of four sets of white 176 mm \times 126 mm stimulus cards, on each of which was a single black dot. The children sat at a table on which an identical but blank response card was

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placed directly in front of each child. The experiment proceeded according to the following instructions:

This is a game in which I will show you some cards. On each card there is a dot, like this [the child is shown a sample stimulus card]. You have this card in front of you [the blank response card is placed before the child], and you must guess where you think the dot is on my card: show your guess by marking (with a pencil) a small "X" on your card. I will then show you my card and you will see whether you were right or not.

When the experimenter was satisfied that the child understood these instructions the experiment was begun. After the child had marked his first guess, the first stimulus card was placed in front of him, about 50 mm from the top of the response card, with the edges of the two cards parallel. The child was then requested to mark on his card the whereabouts of the dot on the stimulus card, as follows: "Now you see where the dot is. Please mark it on your card." The procedure was then continued as before: "Now you must guess where the dot on the next card is. Show your guess in the same way as before. There are several of these cards, and perhaps with practice you will be able to guess correctly where the dots will be." Each series of cards was presented in this manner, crosses being labelled a, b, c, etc., and dots 1, 2, 3, etc. If a child was unable to use a pencil, he was asked to point with his finger and the necessary markings were filled in by the experimenter.

Four series of cards were administered, a separate response card being issued for each. The underlying plans of dots for the four series may be described as follows:

Series 1: A straight line of six evenly spaced dots (18 mm apart) extending vertically from mid-top toward mid-bottom, the first dot being 18 mm from the upper edge.

Series 2: A straight diagonal line of seven evenly spaced dots (25 mm apart) extending from a point 25 mm from the lower left corner toward the upper right corner.

Series 3: A centrally placed circle (diameter = 80 mm) of eight evenly spaced dots (29 mm apart), beginning at about two o'clock and progressing in counterclockwise direction, the last dot being at three o'clock.

Series 4: An alternating up and down sequence of 11 evenly spaced dots extending from mid-left to mid-right. The first dot was 22 mm from the left edge, the second 25 mm above the first, 13 mm to the right; the third on the same plane as the first, 13 mm to the right of the second; the fourth 25 mm below the first, 13 mm to the right of the third; the fifth on the same

plane as the first, 13 mm to the right of the fourth; and so on in an alternating zigzag series.

It is considered that the above procedure lays down sufficient conditions for the study of predicting, since it demands the recording of information in such a way that not only are past responses constantly available for inspection, but also they are recorded serially, thereby facilitating recognition of order in their arrangement.

In this experiment each series was, in fact, designed according to an orderly plan, on the assumption that recognition of such order would set the stage for accurate prediction. It should be noted, however, that at the time of making a prediction a subject can never know for certain whether his prediction is accurate; since, until he can verify it (e.g., by observing the next card), he has no means of knowing whether the order that he has recorded will in fact be maintained. This merely reemphasizes Wiener's (3) axiom that to predict the future is to perform an operation on the past: an act of prediction depends wholly on past and present information, and not in the least on the future (1).

C. RESULTS

1. *Perceptual Responses*

Perceptual responses refer to the reproductions of dots made on the response card while the subject looked at the stimulus card. It was found that localization of perceptual responses was least accurate among the 5-6-year children, with improvement thereafter, although the difference between the older-age groups was slight. Perceptual inaccuracy occurred as a result of a variety of influences. For example, about 36 per cent of the 5-6-year children and 15 per cent of the others exhibited reflections or inversions of spatial localization in their perceptual responses, so that a dot at the top right of the stimulus card would be reproduced at the top left, bottom right, or bottom left on the response card. This was often inconsistent for a given child, so that, within a single series, misplacement might occur for two or three dots in sequence, after which localization would become approximately correct. Another common perceptual misplacement occurred due to inaccurate horizontal-vertical coordination, this again being most prominent among the younger children. Another source of misplacement arose as a result of the influence on stimulus reproduction of the preceding guess or series of guesses: thus, a child might reproduce a dot near where he had guessed it would be, rather than where it was on the stimulus card. This effect increased slightly with age, occurring among 14 per cent, 18 per cent and 20 per cent of the three groups, respec-

tively. Another displacement occasionally occurred because there was no space left in which to reproduce the stimulus, in which case it would be "moved" into the neighboring vicinity: e.g. to the left or right, upwards or downwards.

2. *Predictive Responses*

It was possible to obtain an assessment of accuracy of prediction by noting which of the guess responses approximated the location of the stimuli which followed them. An analysis of this kind was undertaken, with emphasis primarily on whether—and, if so, when—directional and spatial order of a sequence was recognized. During this analysis, allowance was made for minor deviations from absolute accuracy.

Table 1 shows the results of the analysis, from which the following general conclusions may be drawn:

(a) The likelihood of successful prediction was inversely related to complexity of stimulus arrangement. Thus, Series 1 elicited the highest incidence of success, Series 2 and 3 progressively less, Series 4 none.

(b) The incidence of successful prediction was very low among the 5-6-year children, considerably higher among the other two age groups, but without significant difference between them: indeed, the percentages of successful prediction for the 9-10-year children were generally smaller than among the 7-8-year group.

(c) A percentage of 10-15 per cent successful predictions may be regarded as the equivalent of chance under the conditions of this experiment, since in two instances such figures occurred for Stimulus 1 (Series 1 and 2, 5-6 and 7-8 years). The reason for this is obscure: it could reflect success in guessing, but might also relate to leakage of information from subject to subject, despite the request to each that they should not divulge to others what had happened during the experimental sessions.

(d) The children exhibited characteristic individual differences in ways of responding, regardless of series, suggesting that for any given child the same response biases were operating in each of the four series.

(e) Accuracy in localization of perceptual responses was not necessarily associated with successful prediction. A number of children (approximately 25 per cent in the 7-10-years range) localized the dots of Series 1 and 2 with reasonable accuracy, yet failed to achieve any success in their predictive responses.

(f) For the four series studied there appeared to be a number of stages in the development of successful predictions. They are put forward tentatively as a subject for further research:

TABLE 1
PERCENTAGES OF SUCCESSFUL PREDICTIVE RESPONSES AND SIGNIFICANCE
OF DIFFERENCES BETWEEN AGE GROUPS

Stimulus card number	Age group 1 (5-6 yrs, <i>N</i> = 37)	Age group 2 (7-8 yrs, <i>N</i> = 38)	Age group 3 (9-10 yrs, <i>N</i> = 40)	Sig of diffs		Groups 2 & 3	
				Groups 1 & 2 C R	P	C R.	P
Series 1							
1	10	15	5	66	N S	1.48	N S
2	3	16	10	1.98	< .10	.79	N S
3	8	34	30	2.93	< .01	.70	N S
4	11	50	40	4.06	< .01	.89	N S.
5	14	53	55	3.94	< .01	.18	N S.
6	22	66	53	4.23	< .01	1.18	N S.
Average	11.3	39.0	32.2	2.92	< .01	.63	N S
Series 2							
1	0	0	0	.00	N S	.00	N S
2	3	5	5	.44	N S.	.00	N S.
3	8	34	18	2.93	< .01	1.63	N S
4	8	24	30	1.94	< .10	.60	N S
5	14	42	38	2.85	< .01	.36	N S.
6	11	37	38	2.77	< .01	.09	N S
7	11	42	35	3.26	< .01	.64	N S
Average	7.9	26.3	23.4	2.19	< .05	.29	N S
Series 3							
1	0	0	2	.00	N S	.00	N S
2	0	0	5	.00	N S	.00	N S.
3	8	13	13	.71	N S	.00	N S.
4	14	13	23	.13	N S	1.16	N S.
5	3	24	33	2.81	< .01	.89	N S
6	5	24	10	2.44	< .02	1.66	N S.
7	5	18	30	1.81	< .10	1.26	N S.
8	5	24	25	2.44	< .02	.10	N S.
Average	5.0	14.5	17.6	1.41	N S	.38	N S.
Series 4							
No successful predictive responses in any age group							

1) Predictive responses apparently random, or placed next to perceptual responses.

2) Predictive responses suggestive of a vague awareness of unidirectional displacement: e.g., from top to bottom of card or from left to right, but without horizontal-vertical coordination.

3) Predictive responses reflecting awareness of unidirectional displacement but not of the regular spacing.

4) Predictive response combining accuracy of both directional displacement and regularity of spacing.

5) The above (4) permits successful prediction of regularly spaced uni-

directional sequences, such as Series 1 and 2. However, if the sequential pattern is variable, as in Series 3 and 4, then recognition of the pattern of change is necessary before successful prediction can occur. This would appear to require an analysis of the interrelations between subsequences together with recognition of a regularly changing directional displacement. These demands were met to some extent by a small proportion of the children for Series 3, but not at all for Series 4. In this connection, it may be relevant that the greater the number of responses recorded on a card, the more complex is the visual display, and the greater is the likelihood of confusion between perceptual and predictive responses.

D. DISCUSSION

When successive "guess" responses correctly predict the location of the stimuli to which they refer, a process is involved which may be compared with that of a missile homing on to its target, as occurs—to use a common example from cybernetics—when a radar-controlled antiaircraft missile constantly corrects its course to intercept that of the aircraft it is set to destroy.

Similarly, responses of a child to the inherent spatial order of the stimuli are unmistakably reflected in his "guesses," which abruptly assume a comparable order converging onto an extension of the track prescribed by his perceptual responses. Clearly, however, a first condition for success in prediction in this experiment is that these perceptual responses should at least be approximately correct in their spatial localization. If they are not, then the inherent order of the stimuli cannot be recognized, since it has not been reproduced.

One reason for lack of success in prediction among children of this study lies, therefore, in their misplaced perceptual responses, inaccuracy being greatest among the 5-6-year group, less in the other two groups, but with little difference between them. It is of interest that the spatial displacements exhibited in the perceptual responses were often analogous in form to spatial misorientations observed in studies of gestalt continuation and design copying by children of similar ages: namely spatial inversions, rotations, and reflections (2).

If there is approximate accuracy in location of perceptual responses, a factor influencing the likelihood of successful prediction is clearly that of complexity of stimulus patterning. When the dots are regularly spaced and unidirectional, as in Series 1 and 2, then the probability of success is greater than if their direction is variable, as in Series 3 and 4. The results of these experiments suggest that between the age of 6 and 7 years there is a marked increase in the degree of pattern complexity that can be handled predictively, whereas between 7 and 10 years there is no change.

An important feature of this study is the observation that accuracy in perceptual responses is not necessarily associated with successful prediction. It has already been noted that if perceptual responses are inaccurately localized, then successful prediction of the location of succeeding stimuli is highly improbable, since the original pattern of the stimuli has not been reproduced. When it is assumed, however, that the patterning has been reproduced, it is necessary to explain why some children are able to predict successfully and others not. When an answer to this question was sought, an impression deriving from this study was that the successive stimuli were not treated as a potentially ordered sequence, but as a succession of events without relation to one another, and without relation to any overriding pattern (this occurred often despite available evidence on the response card). Such an interpretation recalls an observation from the gestalt continuation study already referred to (2): namely, that, when an attempt was made to reproduce a repeating sequential pattern, the responses of young Ghanaian children (5-8 years) were often dominated by immediately proximate events, as a result of which behavior was not modified in accordance with earlier events. Such an approach reduces the likelihood of response to order or pattern within a sequence, and results in low scores on sequence continuation tests and lack of success in the prediction experiment.

As a tentative conclusion, it is therefore suggested that at least three conditions must be fulfilled before successful predictions will occur in this experimental context. First, perceptual responses must reflect the order or patterning inherent in the stimuli; second, the subject must perceive this order; third, he must utilize the existing organizational structure of his reproductions as a basis for inferring its most probable subsequent development, the outcome of this being his predictive response.

E. SUMMARY

An experimental game was devised to study predictive functions among 115 Ghanaian children aged from 5 to 10 years. The game involved the cumulative graphic reproduction on a response card of single dots presented on successive stimulus cards, the dots being arranged to form an orderly sequential pattern. Before being shown each stimulus card, subjects were requested to guess where they thought the dot would be, and to mark the guessed position on the response card.

The incidence of successful prediction with relatively simple patterns of dots was low (10-15 per cent) among the 5-6-year children, significantly

higher among the 7-8- and 9-10-year children (35-55 per cent), the latter two groups showing no differences according to age.

Analysis of results suggested that at least three conditions must be fulfilled before successful predictions occur: (*a*) perceptual responses must reflect the order or patterning inherent in the stimuli; (*b*) this order must be perceived; and (*c*) the subject must utilize the existing organizational structure of his reproductions as a basis for inferring its most probable subsequent development, the outcome being his predictive response.

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SOCIAL CHANGE AND SEXUAL BEHAVIOR OF ARAB UNIVERSITY STUDENTS*

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A. INTRODUCTION

Interest in the behavioral concomitants of social and cultural change can be traced to the work of anthropologists on acculturation. In his attempt to put the data from such studies into some system, Keesing (3, p. 83) describes a zone of behavioral stability and another of behavioral change. The first zone contains behavior that is basic to "survival, security, integrity, and values . . .," while the second zone includes nonaffectively charged techniques which he identifies as "instrumentalities." Examples of such instrumentalities are "tools, etiquette, military tactics, voluntary elements of taste, etc. . . ." Broadly conceived, these two zones include nonmaterial and material categories of behavior. Doob (1, p. 16), who has given us the major empirical study of the psychological consequences of "becoming civilized," implies essentially the same idea when he distinguishes between "central" and "segmental" behavior. Doob (1, p. 156) also recognizes that, when other things are equal, beliefs and values that are traditionally learned at an early age are less likely to change because they appear to serve some continuing personality needs. In discussing the same problem, Dreger (3) uses the concepts of "central" and "peripheral" functions of personality and indicates that, when external forces impinge upon the individual, the central functions of personality are less easily changed than the peripheral functions. If the above is true, we can expect behavior whose basis is formed in early childhood to be resistant to change under favorable environmental external conditions.

This study is designed to test the above assumption by the repetition of a study of sexual behavior (6) after an 11-year interval on an essentially similar population at the same university. The study was made on Arab students at the American University of Beirut, which is the largest American institution

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of higher learning outside the continental United States, in 1952 and then repeated in 1963.

B. THE MIDDLE EAST

The term Middle East, as used in this paper, refers only to the countries from which the Ss in this study came: Lebanon, Syria, Jordan, Iraq, and Egypt. During the past 10 years that area has witnessed many drastic changes. New social, political, and economic patterns have emerged and, since stability has not been reached, these new patterns will continue to change. One could legitimately say that the way of life of the Middle East has changed, and its traditional society is passing away (5). But the pattern and shape of the new society are still in the process of formation. It is doubtful whether such changes have directly influenced the sexual code of behavior in the area.

The traditional sexual code in the Middle East is somewhat rigid and restrictive. The subject of sex is avoided except between peers. Generally the sexes are segregated; a double standard of sexual behavior is adhered to, a standard in which the premarital exploits of males are condoned rather than approved. Virginity of women is placed at a premium and it is not uncommon, even among the more modernized Christian communities, to hear of brothers murdering their sisters for having disgraced the honor of the family by extra or premarital relationships (6, p. 30).

Dating and romantic love are much rarer here than in America. "Petting" is rare, for a girl can hardly be considered "naughty but nice." There are some "virgin prostitutes" who will for money engage in "petting" to the point of an orgasm. The distinction between "good" and "bad" girls is very sharp, and it plays an important role in Arab films. Virginity at marriage is extremely important. The Moslem marriage contract has a space for specifying whether the bride is a virgin. In many villages, Christian and Moslem, a blood-stained sheet is exhibited after the first night of marriage, as evidence of the bride's virginity and the groom's virility.

Even though this code and pattern have not yet basically changed, their intensity differs from place to place. In big cities especially, increased opportunities for sexual expression are available and the relations between the sexes are increasingly relaxed. This is particularly true in the case of Ss who study in a coeducational institution in one of the most cosmopolitan cities of the Arab world—a city which is known for its night life and its attractions, a city in which, according to some conservative students, "honor is cheaper than the tram fare."

Some important changes have occurred, during the period under study, in the setting in which this study was conducted. During this period the number

of women students at the university has more than doubled. The university has witnessed an increase in the number of American students who have a more liberal attitude toward dating and its concomitants. A relaxation in the residential regulations of students also took place. Whereas in 1952 all students, except seniors, were required to live on campus, the rule in 1963 applied only to freshmen, who were not included in the present study. Students can now live in rented apartments and rooming houses which have mushroomed in the vicinity of the university. Three new women's dormitories have also been built on campus during this period. In fact, the whole area around the university has changed from one that was strictly residential in 1952 to one that is a mixture of a business, recreational, and residential. Whereas in 1952 there was no movie house within walking distance of the university, now the area has six. Hotels, furnished apartments, bars, restaurants, and night clubs have invaded the area to such an extent that one does not need to go down town. The area has a large transient population and has lost its residential character of a decade ago. Such conditions are conducive to greater freedom in sexual and other behavioral areas. It is conceivable therefore to expect some change in the reported sexual behavior of university students living in such a changed community.

C. METHOD

The same questionnaire and instructions were used in 1963 as in 1952. Arabic-speaking male students who were currently taking psychology courses, or who had taken such courses during the previous semester, were invited by mail to take part in a "psychological study that was neither political nor religious in nature." They did not know about the nature of the study until the questionnaires were distributed to them. Ninety-six out of 120 invited students appeared at the set time and answered the questionnaire. The instructions allowed *S* complete freedom to answer any number of the questions, or none of them, if he so chose. Fifty of the *Ss* were Moslems and 46 were Christians. Forty-six of the *Ss* came from Jordan and Palestine, 41 from Lebanon, five from Syria, three from Iraq, and one from Egypt. As compared to the 1952 sample, the proportion of the Lebanese to non-Lebanese dropped from 50 per cent to 42 per cent. The age range of the 1963 *Ss* was 17 to 28, the same as for the 1952 group, with 60 per cent in each group falling between 19 and 21 and the mean at 21.

D. RESULTS

The replies of the two groups with respect to their sexual behavior are summarized in Table 1. The figures indicate the frequency with which a certain type of behavior is reported to have occurred by the *Ss* within the

12-month period preceding the study. The only exception is in the case of homosexual experiences which refers to frequency during entire life. Figures in parentheses refer to the responses of the 1952 Ss.

Except for the number of Ss who indicated masturbating during the twelve-month period before the study, no other significant difference appears between the two groups. In 1952, 97 of the 113 Ss reported masturbating during the 12 months preceding the study, while in 1963, 93 of the 96 Ss reported such behavior ($p < .02$, chi square). This seems to suggest that a larger number of the Ss in 1963 claimed that they were masturbating, even though this was not their only sexual outlet. The number of Ss reporting ever having either of the four types of sexual experience and the age of first experience remains the same.

Additional information, which does not appear in Table 1, was obtained from the Ss on their recent heterosexual intercourse. They were asked to indicate whether they sought sexual release by going to licensed houses of prostitution or used some other means. Whereas 67 of the 78 Ss with a positive heterosexual history in 1952 reported going to brothels, only 39 of the 72 heterosexually active Ss in 1963 reported going to houses of prostitution ($p < .001$, chi square).

Even though no differences appear in the age of first sexual experience of any of the categories, it is interesting to note that for both groups the mean age at which the first homosexual experience is reported to have occurred is lower than the means for onset of the first nocturnal emission, masturbation, and heterosexual intercourse. These results seem to indicate that the first experience of 43 per cent of our Ss was homosexual in its nature and occurred before they became sexually mature: i.e., it is earlier than the onset of nocturnal emissions. In general, they were introduced to it mainly by older peers or, less frequently, by a practicing adult. Even though homosexuality appears to be their first introduction to sex, it was also the first to be abandoned. Only three Ss in each group reported this practice during the 12-month period preceding the study.

E. DISCUSSION

The significantly larger number of Ss indicating masturbation in 1963 may either represent a real increase in this kind of behavior or reflect a more accepting and mature attitude about sex. The difference between the two groups that most significantly reflects the changing social condition is the decline in the number of the 1963 Ss who reported patronizing prostitute houses. This decline seems to reflect the increased availability of "other sources" for

TABLE 1
INCIDENCE OF CERTAIN TYPES OF SEXUAL BEHAVIOR AMONG ARAB UNIVERSITY STUDENTS IN 1952 AND 1963^a

Question asked	Nocturnal emissions	Masturbation	Heterosexual intercourse	Homosexual intercourse
Ever?				
% Yes	90 (96.8)	92.9 (91.1)	75 (69.0)	43.7 (38)
Age at first experience?				
Mean	14.5 (14.4)	14.3 (14.6)	17.2 (16.9)	12.4 (13.2)
Range	12-20 (12-18)	9-21 (8-23)	7-24 (8-21)	5-20 (6-19)
Frequency?				
Number with positive history	86 (91)	93 (97) ^a	72 (78)	42 (43)
Mean	19.9 (2)	37.2 (35.2)	21.1 (14.3)	12.6 (7.7)
Range	1-120 (1-100)	1-400 (1-540)	1-160 (1-150)	1-200 (1-50)

^a Figure in parentheses for 1952 S's

* Diff. sig. at the .02 level of confidence

sexual gratification and the relatively greater ease with which they are attainable now that the students live off campus. A new phenomena of "call girl" seems to have appeared on the scene. Few, if any, reported having had sexual intercourse with girl friends, or those they planned to marry. The decline in the student patronizing of prostitutes has been noticed by the prostitutes themselves and reported by Khalaf (4). Responses of our Ss seem to show that going to "special houses" or bringing call girls to their apartments has a higher status in student culture than going to prostitutes. It is important to note that this decline does not represent a decline in the mean number of heterosexual experiences reported by the Ss but mainly a change in outlet.

The fact that the results do not indicate any significant changes in the reported frequencies of sexual behavior of the Ss seems to be in accordance with the expectation of no appreciable change in behavior in spite of a changed social environment and an increased opportunity for sexual freedom. Sexual behavior is a central function of personality, and deep personality changes in either individuals or groups do not occur over a decade or as a result of marked social changes. The American experience has shown that in spite of the sexual revolution "not much more premarital sexual freedom actually is present now than a generation ago (2, p. 17)." The present Ss may have shown an increasingly liberal attitude toward sex, but not a concomitant change in their behavior.

F. SUMMARY

Ninety-six students were given a questionnaire on sexual behavior and beliefs in 1963. The same questionnaire had been given to a similar group in the same setting in 1952. In general, the incidence of nocturnal emissions, masturbation, heterosexual intercourse, and homosexual intercourse reported by the Ss in 1963 did not differ significantly from that of 1952. Two significant differences appear: more of the 1963 Ss than the 1952 Ss indicated masturbating during the 12 months preceding the study; and patronizing prostitutes declined.

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AN EXPERIMENTAL EVALUATION OF HEIDER'S BALANCE THEORY WITH RESPECT TO SITUATIONAL AND PREDISPOSITIONAL VARIABLES⁻¹

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A. INTRODUCTION

Interpersonal perception and object perception may be distinguished according to Tagiuri's (16) concept of "double interaction": in person perception, unlike object perception, the individual, through his own presence and behavior in the perceptual situation of the other, may in fact alter the perceptual characteristics of the person he is trying to judge. While interest in the *content* of interpersonal perception is exemplified by impression-formation studies [e.g. (1, 5, 9)], its *process* has been given a great deal of attention by various "balance" theories (4, 7, 13, 14, 15).

Even though various balance models employ different terminology (e.g., congruity, balance, consonance, symmetry, lack of disparity), they all presuppose, to varying degree, human rationality: the notion that the individual's thoughts, attitudes, beliefs, and behavior tend to organize themselves in a meaningful way. They also assume that any perceived inconsistency generates a noxious state within the individual, setting up subsequent pressures toward its elimination. In Fritz Heider's (7) balance theory, the analysis is focused on the *p-o-x* unit of the cognitive field, consisting of *p* (the perceiver), *o* (another person), and *x* (either a third person, or an impersonal entity). The relationship within the unit is one of interdependence, with affective feeling and cognitive unit organization being the governing variables. Cognitive unit organization occurs via perceived similarity, proximity, causality, or belonging. Unless either *one* or all *three p-o-x* relations are positive, the individual's system is considered to be in a state of "imbalance." Thus, eight basic interpersonal situations can be generated (see Table 1, first four columns: situa-

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TABLE 1
IPS (INTERPERSONAL PERCEPTION SITUATIONS) DESIGN

Situation	<i>p-o, o-x, p-x</i> pattern			"ought" and "can" pattern	
	<i>L (p, o)</i>	<i>C (o, x)</i>	<i>L (p, x)</i>	obligation	power
I Balanced	pLo	oCx	pLx	oOughtCx	oCanCx
I Balanced	pLo	oCx	pLx	oOughtCx	o-CanCx
I Balanced	pLo	oCx	pLx	oOught-Cx	oCanCx
I Balanced	pLo	oCx	pLx	oOught-Cx	o-CanCx
II Balanced	pLo	o-Cx	p-Lx	oOughtCx	oCanCx
II Balanced	pLo	o-Cx	p-Lx	oOughtCx	o-CanCx
II Balanced	pLo	o-Cx	p-Lx	oOught-Cx	oCanCx
III Balanced	p-Lo	oCx	p-Lx	oOughtCx	oCanCx
III Balanced	p-Lo	oCx	p-Lx	oOughtCx	o-CanCx
III Balanced	p-Lo	oCx	p-Lx	oOught-Cx	oCanCx
III Balanced	p-Lo	oCx	p-Lx	oOught-Cx	o-CanCx
IV Balanced	p-Lo	o-Cx	pLx	oOughtCx	oCanCx
IV Balanced	p-Lo	o-Cx	pLx	oOughtCx	o-CanCx
IV Balanced	p-Lo	o-Cx	pLx	oOught-Cx	oCanCx
V Imbalanced	pLo	oCx	p-Lx	oOughtCx	oCanCx
V Imbalanced	pLo	oCx	p-Lx	oOughtCx	o-CanCx
V Imbalanced	pLo	oCx	p-Lx	oOught-Cx	oCanCx
V Imbalanced	pLo	oCx	p-Lx	oOught-Cx	o-CanCx
VI Imbalanced	pLo	o-Cx	pLx	oOughtCx	oCanCx
VI Imbalanced	pLo	o-Cx	pLx	oOughtCx	o-CanCx
VI Imbalanced	pLo	o-Cx	pLx	oOught-Cx	oCanCx
VII Imbalanced	p-Lo	oCx	pLx	oOughtCx	oCanCx
VII Imbalanced	p-Lo	oCx	pLx	oOughtCx	o-CanCx
VII Imbalanced	p-Lo	oCx	pLx	oOught-Cx	oCanCx
VII Imbalanced	p-Lo	oCx	pLx	oOught-Cx	o-CanCx
VIII Imbalanced	p-Lo	o-Cx	p-Lx	oOughtCx	oCanCx
VIII Imbalanced	p-Lo	o-Cx	p-Lx	oOughtCx	o-CanCx
VIII Imbalanced	p-Lo	o-Cx	p-Lx	oOught-Cx	oCanCx

Note: Key to Table 1: *p* = perceiver; *o* = the other person; *x* = the act or event; *L* = likes; *-L* = does not like; *C* = causes; *-C* = does not cause; *pLo* = *p* likes the other person; *p-Lo* = *p* does not like the other person; *pLx* = *p* likes the act or the event; *p-Lx* = *p* does not like the act or event; *oCx* = *o* is perceived as causing the act or event; *o-Cx* = *o* is perceived as not causing the act or event; *oOughtCx* = *o* is perceived as obliged to cause the act or event; *oOught-Cx* = *o* is perceived as obliged not to cause the act or event; *oCanCx* = *o* is perceived as having the power to cause the act or event; *o-CanCx* = *o* is perceived as not having the power to cause the event or act.

The four situations involving *o-Cx*, *o-CanCx*, and *oOught-Cx* in one unit have been discarded because they negate the *o-x* relationship completely. When *o* is completely disassociated from *x*, the situations do not entail any interaction leading to the existence, or the quest for, balance.

tional Types I to VIII). Finally, it is postulated that (a) there is a tendency for cognitive units to achieve balance, and (b) if no balance exists, the state of imbalance will give rise to tension and forces to restore balance.

Attempts to assess such theoretical predictions empirically have justified Zajonc's statement: "In general, the consequences of balance theories have up

till now been rather limited. Except for Newcomb's longitudinal studies . . . direct evidence is scarce" (19, p. 285). Studies related to Heider's balance model are especially scarce. Most have either dealt with extrapolations of the theory (2) or predictions with respect to affective moods (12). Studies attempting to assess systematically Heider's cognitive and affective postulates have led to inconclusive results (8).

The present study explored the applicability of Heider's theory with respect to specific situational and predispositional variables, and interactions among these. A broad scope exploration of five kinds of cognitive responses to interpersonal situations was executed within a structural framework dictated by (*a*) variations of situational contexts and (*b*) variations of predispositional interpersonal values.

B. METHOD

1. *Subjects*

Subjects were 368 Jewish male high-school students, 15-17 years old, from urban areas of Florida, who were members of a community-youth organization. All Ss were of middle-class socioeconomic background and generally maintained average or better than average school grades. The availability of subjects was the primary reason for studying this select group. Such selection should not be a crucial issue here, since the major aim of this study was to assess the applicability of Heider's theoretical predictions rather than necessarily to generate normative generalizations.

2. *Procedure*

a. Motivational preselection. The Survey of Interpersonal Values (SIV) is a paper-and-pencil task designed "to measure certain critical values involving the individual's relationship to other people, or their relationship to him" (6, p. 3). It includes scales measuring Support (Su), Conformity (C), Recognition (R), Independence (I), Benevolence (B), and Leadership (L). Such interpersonal values were assumed to be most pertinent to the area of interpersonal perception, with which this study deals.

All Ss took the SIV under standard instructions, anonymously. From the total sample, 98 Ss were subsequently selected and divided into seven experimental subgroups of 14 Ss per group. Six groups reflected "extreme," or "dominant" scores on each scale of the SIV (at or above the 90th percentile), while the seventh reflected "moderation" (all scores below the 70th percentile), and thus constituted a control for "extremeness."

b. Cognitive assessment. The IPS (Interpersonal Perception Situations) is a specially constructed paper-and-pencil task designed for this investigation. It consisted of a verbal description of 28 different hypothetical social situations from the milieu of the Ss, all modeled after Heider's balanced or imbalanced $p-o-x$ situations. In order to confirm the presumed adherence of these situations to the $p-o-x$ model, the following steps were taken: (a) A series of open-end tests modeled after the "Esch test" (7, p. 176) was administered to a group of Ss asked to judge the outcome of a series of verbally described hypothetical $p-o-x$ situations. Wording of items in the IPS was derived from these responses. (b) Three judges appraised each IPS item independently with respect to language clarity, meaningfulness to high-school Ss, and adherence to the $p-o-x$ model (items on which the judges disagreed were discarded). (c) The final version of the IPS was administered to a pretest population of 27 Ss, who were subsequently interviewed with respect to the meaningfulness of the situations, clarity of language, and the range of possible cognitive responses.

The final version of the IPS included 28 situations (14 balanced and 14 imbalanced). These included the eight basic Heiderian interpersonal situations, and also incorporated two other postulates of Heider which have not been systematically integrated with the balance theory: "Ought" (the perception that the other person ought or ought not to cause an event) and "Can" (the perception that the other person has the power or is unable to cause an event). The format of the IPS is described in Table 1.

Each IPS item was thus constructed in such a manner that it could be reasonably assumed that the S , assuming the role of the perceiver (p), appraised each situation according to the given $p-o-x$ relationships. That is, the perceived o (the other person) was either liked or disliked; x , an impersonal event, was either liked or disliked; o (the other person) either caused an event or did not cause it; o (the other person) was either obligated to cause that event or was obligated not to do so; and, finally, o (the other person) was perceived as having the power to cause that event or as being unable to cause it. The various combinations of imbalanced situations were expected, according to Heider, to generate "imbalance" in the perceiver (S), inducing in him cognitive distortions of such nature as to make him perceive the situation in a different light. This cognitive distortion would then be expected to tend toward balance, in which there is minimum tension. Balanced situations, on the other hand, were not expected to cause such cognitive disturbance in the perceiver, who should therefore display no evidence of cognitive distortion.

Following presentation of each of the 28 situations of the IPS, S was instructed to select one of five predefined response alternatives allowing him

to indicate either: (a) a change in the original $p-o$ relationship (PO response); (b) a change in the original $o-x$ relationship (OX response); (c) a change in the original $p-x$ relationship (PX response); (d) acceptance or tolerance of the original situation (T response); and (e) cognitive denial (D response) of the original $p-o-x$ event because of some vague future expectations—that is, the occurrence of act X in the perceived imbalanced situation is only *temporarily* tolerated; the perceiver's expectation is that eventually, somehow, a balanced situation will occur. In the context of imbalanced situations, responses (a), (b), and (c) were considered balance-seeking efforts, leading to subsequent cognitive balance and tension reduction.

A typical imbalanced IPS item (Table 1, line 22) reads as follows:

ERIC knows that Lonny is an influential member of the group who can easily help him win the election ERIC wants to be elected He thinks he is highly qualified for the position ERIC can't stand the sight of Lonny. He thinks, however, that Lonny ought to help him win the election. Lonny does help, and ERIC consequently wins.

The five predefined alternative responses in this example (PO, OX, PX, T, and D) read as follows:

ERIC thinks: (a) "Lonny is a nice fellow after all" (b) "It isn't because of Lonny that I won this election." (c) "I don't want this position after all." (d) "This is just fine" (e) "These election results won't prevail."

The IPS was administered to the experimental sample of 98 *Ss*, anonymously. The instructions briefly explained the manner in which *S* should appraise the situation and select one of the five alternatives, with an admonition that there were no "true" or "false" answers and that, despite their apparent similarity, no two items were alike. To control for order effects, the IPS was used in two forms, with the item order of one reversed from that of the other. Response alternatives for each IPS item were presented in randomized order. A frequency count of each category of cognitive response to each item was then executed.

C. RESULTS AND DISCUSSION

Analysis and interpretation of these data focused on two major areas: (a) support for Heider's theory with respect to cognitive balanced attainment and (b) variety of modes of response displayed by the perceiver upon being confronted with hypothetical imbalanced $p-o-x$ situations. While the primary aim in the first area was to test Heider's theoretical assumptions, the second area was of interest from an empirical point of view: i.e., the extent to which

specific modes of response were related to predispositional factors, to situational factors, or to both.

The cognitive denial (D response) category was introduced, since D responses had occurred in open-end preliminary explorations, although rather infrequently. Essentially, D responses are neither balance seeking (since they incorporate some sort of temporary tolerance based on some vague future expectations) nor nonbalance-seeking (since they represent an extreme form of p - x distortion). In investigating balance-seeking efforts with respect to the applicability of Heider's theory, only Heider's postulated balance-seeking type of responses (PO, OX, and PX) were applied; whereas in investigating modes of cognitive response, the relatively infrequently occurring D responses (10.2 per cent of all responses) were scored independently, as were the four others (PO, OX, PX, and T).

Despite the precaution exercised in construction of the IPS, it is possible that the derived differences from one IPS item to another may reflect nothing more than the subject's response to speech clichés or "social desirability." Since the IPS is not a standardized test but merely a series of descriptions of hypothetical situations to which the subject is asked to respond, analyses based on responses to a single item may be suspect. However, when the patterns across various sets of several IPS items are analyzed, the chances of cancelling out extraneous factors, such as social desirability, are increased. The results of the present study indicated a number of such broad and stable trends.

1. *Cognitive Balance Seeking*

Table 2 shows the total number of responses to imbalanced IPS situations by all Ss. A chi-square analysis of independence (the frequency unit being responses rather than subjects) showed a significant ($p < .05$) overall difference.² Additional goodness-of-fit (to Heider's model) analyses indicated significantly higher frequencies of balance-seeking responses across all situations ($p < .05$): i.e., a general pattern in line with Heider's theoretical predictions. A similar comparison of balance-seeking response frequencies among the four types of imbalanced situations yielded no significant differences. This finding is also consistent with Heider's assumptions: no differences among

² Total independence of observation is obviously lacking, since the number of responses exceed the number of subjects. However, each Type consists of several items; thus, responses to any particular Type *may* or *may not* have been made by the same individual. Neither Cochran's Q test nor chi-square tests of independence are truly applicable. Since chi square would be more conservative in terms of Type II error (17, p. 440), that statistic was employed in all such analyses.

the four types of situations with respect to balance-seeking efforts are suggested by Heider's theory.

TABLE 2
COGNITIVE RESPONSE FREQUENCIES: IMBALANCED SITUATIONS

Situation		Balance-seeking responses	Nonbalance-seeking responses	Total
		PO, OX, PX	T, D	
Type V	pLo, oCx, p-Lx (4 items)*	256	136	392
Type VI	pLo, o-Cx, pLx (3 items)*	205	89	294
Type VII	p-Lo, oCx, pLx (4 items)*	281	111	392
Type VIII	p-Lo, o-Cx, p-Lx (3 items)*	184	110	294
Total		926	446	1372

* The number of items representing each type of *p-o-x* situation varied (see note in Key to Table 1).

Table 3 indicates the results of chi-square analyses of goodness-of-fit to Heider's theoretical model, for each predispositional group at each situational level. *Situational* analyses (ignoring predispositional factors) and *vice versa*, *predispositional* analyses (ignoring situational factors), yielded several important empirical findings. For example, Type VII imbalanced situations (*p-Lo, oCx, pLx*) evoked the greatest amount of balance seeking. Furthermore, predispositional subgroups C, B, and L showed no overall pattern of

TABLE 3
FREQUENCY DISTRIBUTION OF RESPONSE PATTERNS CONFIRMING HEIDER'S
THEORETICAL PREDICTIONS: IMBALANCED SITUATIONS

Situation Level of analysis		Predisposition							Frequency of confirmation
		Su	C	R	I	B	L	M	
Overall		*		*	*			*	4
Type V	pLo, oCx, p-Lx					*			1
Type VI	pLo, o-Cx, pLx		*		*			*	3
Type VII	p-Lo, oCx, pLx	*		*			*	*	4
Type VIII	p-Lo, o-Cx, p-Lx				*				1
Ought	cause x		*	*	*		*		4
Ought not	cause x								0
Can	cause x				*		*		2
Not can	cause x					*		*	2
Ought, can	cause x			*	*	*		*	4
Ought, not Can	cause x	*	*		*			*	4
Ought not, Can	cause x							*	1
Ought not, not Can	cause x								0
Frequency of confirmation		3	3	4	7	3	3	7	30

Note. * = confirmation significant ($p < .05$) by chi-square analysis of frequencies of balance-seeking responses for each predispositional subgroup.

adherence to Heider's theoretical predictions. However, such findings are difficult to interpret unless situational and predispositional analyses are integrated. Therefore, observed efforts toward attainment of cognitive balance were assessed as a joint function of particular kinds of subjects confronting particular kinds of imbalanced situations

The data in Table 3 indicate that situations in which a disliked person causes a liked event (Type VII) seem to induce a considerable amount of balance seeking. Similarly, situations involving the perception of the other's obligation to cause an event ("Ought" condition) appear to induce efforts toward attainment of cognitive balance. In fact, balance seeking under the "Ought" conditions was maintained irrespective of whether the other was perceived as having or lacking the power to cause an event ("Ought, Can," and "Ought, not Can" conditions).

Certain predispositional groups, however, displayed specific patterns of balance seeking. The two groups that best adhered to Heider's theoretical predictions [the Independence (I) and Moderation (M) group] display realistic balance-seeking efforts upon the perception of the other's *power* ("Can" condition), as well as his obligation, to cause an event. Further evidence for "logically realistic" appraisal is reflected in some atypical responses (as compared to the other groups) displayed by the Independence (I) group. It showed conspicuously little balance-seeking efforts in Type VII imbalanced situations, in contrast to balance-seeking efforts in Type VIII imbalanced situations. This is consistent with the essential nature of Independence, since highly independent individuals presumably would show little cognitive disturbance upon the perception of disliked persons. Such individuals, however, may experience somewhat more cognitive disturbance over imbalanced situations lacking logical structure. Type VIII imbalanced situations ($p\text{-}Lo, o\text{-}Cx, p\text{-}Lx$), because of the triple negative relationship, are lacking logical structure as interpersonal situations, and therefore seem to induce considerable balance-seeking efforts in the highly independent individual.

2. *Modes of Cognitive Response*

Further evidence for some positive relationship between the predisposition of Independence and Heider's theoretical predictions is derived from the analyses of various modes of response to imbalanced IPS situations (Table 4). Only the Moderation (M) and Independence (I) group significantly confirmed Heider's predicted response pattern which minimizes nonbalance-seeking responses (T and D). The Independence (I) group in particular showed pronounced preference for balance seeking; and its tendency to avoid cog-

nitive denial (D responses), as well as its atypical response pattern to Type VII and Type VIII imbalanced situation, further suggested "logically realistic" appraisal. Such trends are further corroborated when the frequency of significant responses was compared for the Moderation (M) group as opposed to each of the other predispositional groups (Table 5). Of particular interest was the observed difference between the two groups that otherwise best adhered to Heider's theory, Independence (I) and Moderation (M), with the former displaying a greater avoidance pattern of cognitive denial (D responses) than the latter.

The data in Table 4 also yielded some indications about response patterns characteristic of the support-seeking individual (Group Su). As exemplified in Type V imbalanced situations (pLo , oCa , pLa), it showed a tendency to regain balance by any means other than by changing his perception of the other person to one of dislike. In fact, he would rather tolerate the imbalanced situation than perceive a pLo relationship (achieve balance via the PO change response).

3. *The Intrapersonal-Interpersonal Continuum*

The general pattern of observed responses in Table 4 and Table 5 suggested that interpersonal values described in the SIV might be arranged on a continuum from highly interpersonally-oriented values (Support, Recognition, Conformity, and Benevolence) to essentially intrapersonal values (Independence). Cognitive balance-seeking responses might also be ordered on the same continuum, from the highly interpersonal PO response (liking or disliking of the other *person*) to the least interpersonal PX response (liking or disliking of an *event*), with the OX response between. Thus, it was hypothesized that predispositional groups whose members are characterized by relatively highly interpersonally-oriented values should display more frequent choice of PO responses, while those characterized by dominant intrapersonal values should display response choices at the other end of the continuum (OX or PX).

The data in Table 4 supported the hypotheses derived from these assumptions. The overall tendency, as displayed by most groups, showed a PO response preference; the tendency of the group at the intrapersonal end of the continuum (the Independence (I) group), showed the expected preference for the least interpersonal PX response; and the Moderation (M) group, occupying the middle range of the continuum, showed a tendency for the expected mixed-preference pattern (PO and PX responses). Additional supportive data were also derived from the data in Table 5: when compared to the highly inter-

TABLE 4
SUMMARY OF SIGNIFICANT DIFFERENCES AMONG FREQUENCIES OF VARIOUS MODES OF RESPONSE WITHIN
PREDISPOSITIONAL SUBGROUPS: IMBALANCED SITUATIONS

Situation	Predisposition	Results
Overall	Total	PO > (OX, PX, T, D)
Overall	I	PX > (OX, D)
Overall	M	(PO, PX) > (D, T)
Type V	Total	PX > (PO, OX, T, D)
Type V	Su	OX > (PO, PX, D)
Type VI	Total	PX > (PO, OX, T, D)
Type VI	I	PX > (PO, OX, T, D)
Type VII	Total	PO > (OX, PX, T, D)
Type VII	I	T > (PO, OX, PX, D)
Type VIII	Total	PO > OX
Type VIII	I	(PO, OX, PX) > (T, D)
Ought	Total	(PO, OX, PX) > (T, D)
Ought	R	OX > (PX, D)
Ought not	Total	PO > (OX, PX, D)
Ought not	I	PO > (OX, PX, D)
Ought not	Total	PO > (OX, PX, T, D)
Can	Total	PX > (T, D)
Not can	Total	PO > (OX, PX, T, D)
Ought, Can	Total	PO > (OX, PX, T)
Ought, Can	C	(OX, PX) > D
Ought, Can	I	(OX, PX) > (T, D)
Ought, not Can	Total	(PO, T) > (OX, PX, D)
Ought not, Can	Total	PO > (OX, PX, D)
Ought not, Can	I	(PO, D) > OX
Ought not, not Can	Total	
		(OX, PX, T) > D
		(PO, TO, X) > D
		OX > T
		PO > (OX, D)
		T > PO
		(OX, T) > D
		(PO, T) > D
		OX > (PX, T, D)
		PO > (PX, D)
		(OX, PX) > D
		T > D
		PX > PO
		PO > D
		(T, PX) > D
		(PX, OX) > D
		PO > D
		(OX, PX) > T
		D > T
		PO > D
		T > (OX, D)
		(PX, OX) > D

Note: > = greater frequency of preceding response, significant ($p < .05$) by chi-square analysis of frequencies of each mode of response; and () = no significant differences among response categories within parentheses.

TABLE 5
SUMMARY OF SIGNIFICANT DIFFERENCES AMONG FREQUENCIES OF VARIOUS MODES OF
RESPONSE ACROSS PREDISPOSITIONAL SUBGROUPS: IMBALANCED SITUATIONS

Situation		Response	M vs. Su, C, R, I, B, L
Overall		PX	M > Su, R, B
Overall		D	M > I
Type VI	pLo, o-Cx, pLx	OX	M > I
Type VI	pLo, o-Cx, pLx	PX	M > Su, R, B
Type VII	p-Lo, oCx, pLx	OX	R > M
Type VII	p-Lo, oCx, pLx	T	I > M
Type VIII	p-Lo, o-Cx, p-Lx	PX	M > Su, L
Type VIII	p-Lo, o-Cx, p-Lx	D	M > I
Ought		T	B > M
Ought		PX	M > Su, R, B
Can		PX	M > Su, R, B
Not can		D	M > R, I, B
Ought, Can		PX	M > Su, R, B

Note: > = greater frequency of preceding response, significant ($p < .05$) by chi-square analysis of frequency of response types for each predispositional subgroup.

personally oriented Support (Su), Recognition (R), and Benevolence (B) groups, the Moderation (M) group (occupying the middle range of the continuum) preferred the least interpersonally-oriented PX response. It was assumed that the only exception to the expected pattern, displayed by the Recognition (R) group choosing OX responses more frequently than the Moderation (M) group (instead of *vice versa*), was a unique response pattern characteristic of recognition-seeking individuals when confronted by Type VII imbalanced situations (*p-Lo, oCx, pLx*). When such individuals perceive the causation of a liked event by a disliked person, they tend to change their perception to one in which the disliked person is not given credit for the causation of that event.

When analyses similar to those described above were carried out for the 14 balanced situations, the Independence group (I) showed the greatest amount of the expected lack of cognitive disturbance. This tolerance, or acceptance of the (balanced) situations, was particularly evident in response to balanced situations involving disliked persons. This is consistent with the notion that the highly independent individual (Group I) shows minimal evidence of cognitive disturbance upon the perception of a disliked person, irrespective of the balance structure of the situation.

4. Theoretical Implications

In summary, the pattern of observations made here only partially supports Heider's theoretical predictions. The overall results indicate that some types

of individuals, in particular kinds of situations, behave more in accord with Heider's theoretical model than do others. The Independence (I) group and, to somewhat lesser extent, the Moderation (M) group adhere most closely to Heider's model. Situations in which the other person is perceived as being obligated to cause an event ("Ought" condition) elicit response patterns that also adhere closely to Heider's model.

The results of this study also allow certain suggestions as to the nature of a hypothetical population to which Heider's theory should be most applicable. It might be characterized by independence, high intelligence, lack of emotional involvement, and lack of sociability. These characteristics suggest such perceptual "types" as "sharpeners" (11), "intellectualizers" (3), "field independents" (18), and "clarifiers" (10). While such characteristics are also in accord with Heider's emphasis on rationalism, cognitive organization, and "common sense psychology," they are not displayed by *all* individuals.

It was thus concluded that Heider's balance theory can provide a useful framework for understanding cognitive reactions to interpersonal events, provided that situational conditions are incorporated into the theory, and provided explicit recognition is granted to the role of predispositional factors.

D. SUMMARY

To test the applicability of Fritz Heider's balance theory, the cognitive reactions of male high-school students to a series of verbally described interpersonal situations based on Heider's *p-o-x* model were assessed as a function of certain situational conditions and predispositional interpersonal values.

Results indicated that certain dispositional groups, under certain conditions, adhered more closely to Heider's predictions than others. It was concluded that if qualifying situational conditions and emphasis on the role of personality factors are incorporated into the theory, it can provide a useful framework for understanding cognitive reactions to interpersonal events.

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NEGATIVE RESPONSES AND SERIAL POSITION EFFECTS ON THE ADJECTIVE CHECK LIST*¹

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A. INTRODUCTION

In its present form the Adjective Check List (ACL) consists of 300 adjectives presented in alphabetical order. Its content has been developed by Gough and his colleagues over the past 15 years: an early list contained 279 words, and this was gradually refined and expanded until the present version of 300 words was agreed upon (1). The ACL has been widely used as a self-rating personality measure. It has also been employed as an indicator of the way in which counsellors and assessors perceive the personality attributes of another person. In either case the respondent is asked to read through the list and to check the attributes that he considers to be applicable. The potential value of an instrument of this kind is immediately obvious.

A considerable amount of work with the ACL has already been carried out and a body of evidence about systematic patterning of responses has been accumulated. This has been reviewed by Gough and Heilbrun (1), who also present information about the validity of the ACL. The present authors have studied its concurrent validity in relation to semantic differential measurement (3), and have concluded that the degree of relationship between the two indices is very encouraging. It appears that many investigations could benefit from the use of a standard list, responses to which are comparable across studies, rather than the use of an *ad hoc* selection of adjectives to record impressions of oneself or of others.

Yet there are two potentially unsatisfactory aspects of the ACL, both of which derive from its method of administration. The constant order of presentation of the 300 items could result in systematic changes in response tendencies. In their own investigations the present researchers noted that the number of adjectives checked by subjects typically dropped by up to 25 per cent in the second half of the list. This could be due to differential applicability of items or to loss of interest or attention by the subjects; it has not yet been

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shown which of these is the case. A second doubt about responses to the ACL derives from the fact that subjects are required only to check adjectives that are thought to be descriptive of the person being judged. This procedure leaves one uncertain about the meaning of an unchecked item. An adjective in this category could be regarded by the subject as of no relevance to the stimulus person (himself or someone else), or it could be that he believes the term to be definitely *not* descriptive of the person. Consider, for example, the unchecked item *ambitious*. A subject's failure to check this could mean that he has not observed the other person in any situations to which ambition is relevant, or (if he is describing himself) he may be unsure about whether he is in reality ambitious. On the other hand, failure to check *ambitious* could mean that the subject perceives the other person or himself to possess qualities which are the opposite of ambitious ones. It is often important to know which of these two conditions obtain. Counselling decisions, for example, might well depend on this kind of information. Furthermore, it is at present not possible to correlate ACL responses with other variables, since the former cannot be treated as indicating a yes-no dichotomy. As the measure is currently used, the meaning of unchecked ACL items is ambiguous.

The experiment reported in this paper is concerned with the two questions raised above. We have looked at possible order effects by varying the sequence in which the checklist items are presented. And by amending instructions to subjects we have investigated the feasibility of requiring negative responses in addition to those usually elicited.

B. METHOD

The ACL was employed to study the impression which subjects had formed of a well-known British politician. Ninety-six undergraduate students from several departments of Sheffield University recorded their perceptions of Mr. Harold Macmillan. None of the subjects had met Mr. Macmillan; but, as previous studies had indicated (2, 3), the "indirect" perception of politicians is a task that subjects take to very easily.

The ACL forms were not the ones in standard usage. They differed from these in two respects. First, the list of adjectives was preceded by a new set of instructions which was designed to obviate any uncertainty about the meaning of an unchecked item. Respondents were asked to "place a Y by the side of any adjective you consider to be descriptive of Mr. Macmillan, and an N beside any adjective you think is definitely not descriptive of him. Any other adjectives leave blank." In all other respects the instructions were standard. A second difference concerned the sequence in which the adjectives were pre-

sented. Half of the forms listed the adjectives in the opposite order to the usual sequence: that is, starting with Item 300 (*zany*) and finishing with Item 1 (*absent-minded*). Whereas 48 subjects responded on a form of this type, another 48 indicated their impressions by working through the items in the normal order from *absent-minded* to *zany*. Both groups received forms incorporating the revised instructions.

C. RESULTS AND DISCUSSION

1. *The Occurrence of Negative Responses*

Subjects found no difficulty in making responses on the yes-no basis and they treated this as a wholly meaningful task. A mean number of 88.72 items was checked as being definitely *inapplicable* to Macmillan. (Group means were 87.67 and 89.77.) This kind of information is clearly of value in measuring perceptions of self or of others, and there appears to be only one argument against asking for these negative judgments as well as positive ones.

This rests upon the possibility that the burden of making negative responses to the ACL might reduce a subject's willingness to make positive responses. If subjects no longer positively checked many items in this condition, then it might be preferable not to ask for negative responses in addition to the positive ones. The authors have been able to see whether the number of characteristics attributed to Macmillan was reduced by the introduction of these negative judgments. They did this by comparing the present results with those from another experiment in which an additional 96 undergraduate subjects gave their impression of Macmillan on the ACL (3). In this latter study only positive responses were given, and the mean number of items checked was 74.79. By taking this value (derived from normal conditions of administration) as a baseline, the authors were able to check whether making negative judgments in the present conditions reduced willingness to check positive items in the list.

In fact, the mean number of positively checked items was 83.60. There is no doubt that subjects are at least as willing to make positive judgments in these conditions as they are in the more orthodox situation. The average number of items checked *overall* by subjects in this experiment was 172.32; this is so much higher than the average number of 74.79 checked under orthodox conditions that the authors are in no doubt that it is worthwhile requesting subjects to make yes-no judgments. There appears to be no strong argument against this; on the contrary, the amount of usable material which is yielded is considerably greater when this procedure is adopted.

TABLE 1
TOTAL NUMBER OF ITEMS CHECKED IN EACH BLOCK OF TEN ITEMS BY BOTH ORDER GROUPS

Item no. ^a	Group 1	Group 300	Group 1	Group 300	Group 1	Group 300
<i>Positive responses</i>						
1	157	141	101	56	201	118
11	105	122	111	130	211	123
21	141	135	121	101	221	142
31	131	143	131	124	231	139
41	221	240	141	190	241	129
51	105	131	151	116	251	119
61	124	149	161	138	261	134
71	113	121	171	169	271	108
81	90	98	181	86	281	50
91	159	172	191	146	291	114
<i>Negative responses</i>						
1	144	143	101	209	201	131
11	151	146	111	162	211	143
21	156	150	121	169	221	149
31	155	144	131	139	231	123
41	64	57	141	86	241	127
51	174	172	151	137	251	138
61	126	111	161	114	261	105
71	168	165	171	100	271	131
81	184	201	181	143	281	216
91	103	104	191	135	291	126

^a The item numbers in the left-hand columns indicate the first adjective of each block.

2. *The Influence of Presentation Order*

Since half of the subjects responded to the items in the order 1 to 300 (call this Group 1) and the other half responded in the order 300 to 1 (Group 300), the authors can investigate the role of serial position by comparing the responses to each item made by each group. It is expected that when items appear early in the list (e.g., Items 1 to 10 for Group 1 and Items 290 to 300 for Group 300), they will be checked more frequently than when they appear later. And since subjects made both positive and negative judgments, the investigators can make this comparison for the two types of response.

The total numbers of responses made by each group to each block of 10 adjectives are shown in Table 1. The items are here numbered according to their alphabetical sequence rather than their presentation order: *absent-minded* is treated as Item 1 for both groups, although it was of course the last item presented to Group 300.

Consider first those items checked as being positively applicable to the stimulus person. The positive responses made by Group 1 (i.e., those obtained under orthodox conditions) show the customary decline over the list. A total of 1346 adjectives from the first third of the list are positively checked by these 48 subjects, whereas only 1155 are checked from the last third. In the case of Group 300 (responding in the reverse order), this decline is much less marked, the corresponding values being 1452 and 1405 respectively. It appears then that an order effect does occur which is not due to changes in the nature of the items. How important is this effect?

Statistical significance cannot be tested by directly comparing responses to each item, since Group 300 tended to make a higher number of positive responses than did the other group. So we need to study the *ratio* between the numbers of responses made by the two groups at each stage. In Figure 1 the general pattern of comparisons between the two groups is set out. The curves in this figure have been smoothed to give a clearer indication of the outcome. Since the ratios along the ordinate are ratios of Group 1 responses to Group 300 responses, a value above 1.00 indicates that Group 1 has checked more items than the other group. Similarly a ratio below 1.00 signifies that fewer responses were made by Group 1.

Consider first the pattern of positive responses. The S-shaped curve suggests that an item is indeed more likely to be checked if it is presented at the beginning of the list than if it is presented at the end. The ratio for the first five items (*absent-minded* to *affected*) is for example 1.31, and the ratio for the last five items (*wise* to *zany*) is .67. The significance of these changes due to serial position may be tested by carrying out χ^2 comparisons for blocks of

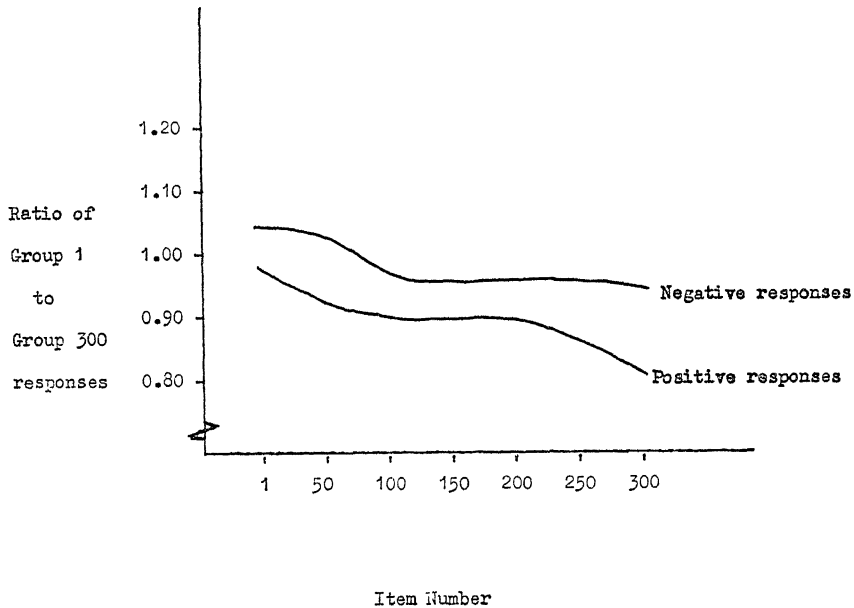


FIGURE 1

RATIO OF RESPONSES TO ACL ITEMS ACCORDING TO SERIAL POSITION
A positive primacy effect is represented by a higher ratio.

items for each group. The authors have taken blocks of 30 items, comparing the number of responses made by each group to Items 1-30 and 271-300, to 31-60 and 241-270, to 61-90 and 211-240, and so on.

By comparing responses of each group at two points with responses of the other group, the investigators can control for the differential frequency of positive responses made by the two groups. The investigators are however biasing the assessment against the null hypothesis that there is no order effect, since the two-group design requires that the researchers compare "early" with "late" items rather than compare each of these with "middle" adjectives. But even with this built-in bias the influence of serial position was not as great as expected. The first 30 items presented (whichever these are) do indeed receive a larger number of positive responses than do these items in the last 30 positions, but this difference does not reach a very high level of significance ($p < .05$, two-tailed test). The same comparison for the negative responses is significant only at the .10 level by a two-tailed test. No other comparisons are significant, and we may therefore conclude that items presented in positions 31-60 are not checked (positively or negatively) more often than these

same items in positions 241-270, and that serial position is similarly unimportant in more central positions.

It appears then that a serial position effect is observable in the pattern of responses to the ACL. There is a primacy effect for items in extreme positions, but this effect is not very large and does not obtain in more central positions. In investigations where the responses of a number of subjects are to be analyzed it will often be advisable, however, to use more than a single order of presentation.

D. SUMMARY

A study was reported of the feasibility of requiring negative responses to the ACL and of the influence of serial position on judgments. Subjects were quite able to make negative responses (that an item is definitely not applicable), and a considerable increase in usable information was yielded by amending the instructions to allow this type of judgment. The advantages of this amendment suggest that it could well become standard procedure.

Varying the order in which the 300 ACL items were presented allowed the importance of serial position to be assessed. It was concluded that a primacy effect is observable, and that steps to offset this effect could usefully be taken.

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SOME EFFECTS OF DISCREPANCY LEVEL ON RELATIONSHIPS BETWEEN AUTHORITARIANISM AND CONFORMITY*¹

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A. INTRODUCTION

Although authoritarianism has frequently been found to be positively correlated with conformity, a review of the literature (6) reveals that negative relationships have also been obtained. When experimental conditions favor a high average level of conformity, authoritarians are reported to conform more markedly than nonauthoritarians. But when sources of conformity pressures have low or questionable status, or the issue under discussion is highly ego involving, authoritarians are sometimes found to be nonconformists (5, 7).²

A variety of theories can be advanced to explain the contradictory findings produced by research in this area. The present study examines one such explanation. It proposes that authoritarians tend to resolve interpersonal disagreements in whatever fashion is favored by the immediate circumstances. Thus when circumstances encourage the use of conformity as a means for resolving disagreements, authoritarians will be strong conformers and the correlation between authoritarianism and conformity will be positive. But when conditions favor nonconforming responses (e.g., rejection of the source, devaluation of the issue, or autistic perception of the message), authoritarians will be nonconformers and the correlation between authoritarianism and conformity will be negative.

Data obtained by Johnson (3) offer an opportunity to test these contentions. College students received personality ratings from a senior psychology major

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² Because research on authoritarianism has almost invariably employed American subjects, the findings linking it to conformity and many other variables should not be freely generalized to other populations. There is abundant evidence that cultural factors influence the scores subjects obtain on the California F Scale and on similar instruments. Consequently, the arguments advanced in the present paper are not intended as propositions that are universally valid throughout the world.

who was believed to have examined their responses to a battery of psychological tests. These ratings were made on a series of 15-step graphic scales, and were uniformly less favorable than the ratings subjects had given themselves in a previous experimental session. Subjects received ratings from the source that were displaced in the unfavorable direction by an average of 1, 2, 3, 4, 5, 6, 7, or 8 steps on the 15-step scales. When the discrepancy level (discrepancy between the subject's own self-ratings and those rendered by the source) was low, subjects autistically minimized the extent of the disagreement. When discrepancy levels were very high, subjects lowered their impressions of the source's competence. High average levels of conformity (negative changes in subjects' self-ratings) were obtained only when discrepancy levels were moderate. Thus the relationship between discrepancy levels and conformity scores was curvilinear, assuming the shape of an inverted U.

If it is true that positive correlations between authoritarianism and conformity occur when conditions favor conformity, and negative correlations occur when conditions favor nonconforming responses, moderate discrepancy levels should generate positive correlations; and large and small discrepancy levels should generate negative correlations. Because the battery of psychological tests employed by Johnson included the California F Scale, it is possible to test these expectations.

B. ANALYSIS AND RESULTS

The data-gathering phase of this research has been described in detail elsewhere (3). Male college students were randomly assigned to eight experimental treatments which differed only with respect to the discrepancy levels that were created. Twenty-two subjects received each treatment. A conformity score was obtained for each subject by computing the average number of steps (on the 15-step rating scales) that he had lowered his self-ratings after seeing the adverse evaluations rendered by the source. Differences between the subject's initial and final self-ratings were summed algebraically and divided by 15 (the number of scales on which self-ratings were made).

Table 1 reports the mean conformity scores of subjects who received each of the eight experimental treatments. It is apparent that maximum conformity occurred when the source advocated moderate amounts of change. Discrepancies of 3, 4, 5, and 6 steps produced greater than average amounts of conformity; and discrepancies of 1, 2, 7, and 8 steps produced less than average amounts of conformity. The relationship between discrepancy levels and conformity is clearly curvilinear.

TABLE 1
RELATIONSHIPS BETWEEN AUTHORITARIANISM AND CONFORMITY
AT EIGHT DIFFERENT DISCREPANCY LEVELS

Discrepancy level	N	Mean conformity scores	Correlation: authoritarianism and conformity*
1	22	.23	+.09
2	22	.74	+.12
3	22	1.24	— .04
4	22	1.54	— .21
5	22	1.31	— .62**
6	22	1.21	— .05
7	22	.69	+.04
8	22	.55	+.41***
All discrepancy levels	176	87	+ .04

* This column reports correlations between authoritarianism and conformity, effects attributable to subjects' initial self-ratings being partialled out.

** $p < .01$.

*** $p < .07$.

In evaluating the relationships between authoritarianism and conformity, it was thought desirable to partial out any confounding effects that might be attributed to the favorableness of subjects' initial self-ratings. (Although subjects were randomly assigned to treatments, the initial self-ratings of subjects *within* any single category did, of course, vary. It is reasonable to believe that subjects' reactions to adverse appraisals may depend in part upon their initial self-evaluations. Furthermore, subjects who gave themselves unfavorable self-ratings had less room on the graphic scales to lower their ratings than did those whose initial self-evaluations were more favorable.) For these reasons, partial correlations between authoritarianism and conformity were computed, the effects of subjects' initial self-ratings being partialled out.

It is apparent that the outcomes reported in Table 1 provide no support for the expectations outlined earlier in this paper. Indeed, the obtained results are sharply contrary to our predictions. The four moderate discrepancy levels that produced higher than average conformity scores generated negative correlations between authoritarianism and conformity, and the four discrepancy levels that produced lower than average conformity scores yielded positive correlations. When the 88 subjects in the four intermediate treatments are combined to form a single category, the obtained correlation is $-.47$ ($p < .001$). When all eight treatments are ranked with respect to the amount of conformity they produced, these rankings are found to correlate (Spearman ρ) $-.83$ ($p < .03$) with rankings based on the magnitude of the *positive* correlations they generated. (The latter ranking involved ordering the cate-

gories from Treatment 8, which yielded a correlation of .41, to Treatment 5, which produced a correlation of $-.62$.) In the present study, correlations between authoritarianism and conformity were significantly more positive when conditions favored low levels of conformity than when they favored high levels.

C. DISCUSSION

This research was initiated in an attempt to supply a parsimonious explanation of conflicting empirical outcomes linking authoritarianism and conformity. It was proposed that authoritarians are especially prone to let their responses to interpersonal disagreements be determined by situational factors. Thus, when circumstances encourage a high level of conformity, correlations between authoritarianism and conformity should be positive, and when conditions inhibit conformity, correlations should be negative. Although these generalizations appear to summarize most of the findings of previous research, they are sharply contradicted by the present study. Consequently, alternative interpretative principles are needed.

It is to be noted that the present study produced its highest positive correlation under conditions that made conformity a somewhat irrational response. Authoritarians conformed to a substantially greater degree than did non-authoritarians only when the ratings they received from the source were so unfavorable as to seem almost preposterous. (At discrepancy level 8 the subject was told he ranked very low on almost every desirable characteristic.) Under such circumstances, nonauthoritarians tended not to conform, but authoritarians yielded to about the same degree as when they received more plausible messages. Thus it may be suggested that positive correlations between authoritarianism and conformity occur when subjects are invited to accept judgments that are rather clearly erroneous. Studies modeled on the Asch-Crutchfield paradigm generally satisfy these conditions and account for most of the positive correlations reported in the literature. On the other hand, negative correlations should be obtained when messages advocate reasonable changes of opinion, and sources are not unimpeachable.

This interpretation assumes that nonauthoritarians are inclined to be "message-oriented" (4); they yield when the message itself is persuasive, but reject erroneous or questionable judgments even when they are advocated by highly credible sources. Authoritarians, on the other hand, are assumed to be "source-oriented" and pay comparatively little attention to the merits of the position they are asked to accept. Indirect support for this contention has been

provided by Harvey and Beverly (1) whose authoritarian subjects not only conformed more markedly to the extreme views expressed by a speaker but also showed less evidence of having understood the speaker's arguments. Since the arguments were not very complex, it is reasonable to conclude that authoritarians paid little attention to the details of the message, and that they reacted primarily to the authoritative status of the source rather than to the evidence he advanced in support of his recommendations. Nonauthoritarians are apparently concerned about being correct, whereas authoritarians strive to maintain amicable relationships with prestigious sources.

If this line of reasoning is valid, much of the authoritarian's conformity behavior represents acquiescence without conviction, whereas the conformity behavior of nonauthoritarians more often involves genuine change of beliefs. That this is the case has been suggested by Hoffman (2) who found that authoritarian subjects were less inclined than nonauthoritarians to repeat their conforming responses in private sessions held two weeks after social pressure had been applied.

In summary, it is our contention that correlations between authoritarianism and conformity are generally positive because researchers usually attempt to induce their subjects to accept judgments that are rather clearly erroneous. When such judgments are communicated by moderately or highly prestigious sources, authoritarians are relatively unconcerned about the merits of the issue, and express public compliance in order to maintain amicable relationships with esteemed persons. When moderately or highly prestigious sources advocate positions that seem to be correct (though different from subjects' initial views), nonauthoritarians conform because they are impressed by the merits of the advocated positions. Authoritarians may also conform, but their responses are more likely to represent superficial yielding. And the evidence of the present study suggests that they are unlikely to conform as strongly as do nonauthoritarians.

The postulated tendency of authoritarians to be source-oriented and of nonauthoritarians to be message-oriented is insufficient to explain all of the conflicting findings linking authoritarianism and conformity. But it is believed that many of the disagreements in the literature can be attributed to this fundamental difference between these two kinds of people.

Finally, it should be noted that the data of this study were obtained from students in an American university. Both authoritarianism and conformity are susceptible to cultural influences. Consequently, it seems probable that subjects drawn from markedly different societies, or strata within a society,

might provide data that would indicate rather different relationships between these two variables. Cross-cultural research is needed to establish the generality of the findings.

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DOGMATISM, FUTURE ORIENTATION, AND PERCEPTION OF TIME*

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AND JOHN A. DOHME

A. INTRODUCTION

The relationship of temporal phenomena to specific personality variables has been of considerable interest to researchers. [For a review of the literature on temporal experience, see (1, 2, 7, 8).] The relationship between dogmatism and future orientation, for example, has been explored and, to some degree, established (3, 5). Similarly, other studies have demonstrated the relationship between future orientation and the perception of time [e.g. (6)].

The purpose of the present study was to investigate, within the same group of subjects, the relationships among dogmatism, future orientation, and the perception of time. It was specifically hypothesized that dogmatism, as measured by Rokeach's (4) Dogmatism (D) Scale, would be significantly and positively related to future orientation, as measured by the present authors' Future Orientation (FO) Scale. It was further hypothesized that subjects' D Scores and FO Scores would be significantly and positively related to their estimates of time.

Since dogmatism has been hypothesized to be related to future orientation, and since Zagana and Zurcher (9) found low, but significant, negative correlation between D Scale Scores and Verbal Subtest Scores on the College Qualification Test (CQT), it was also hypothesized in this study that both FO Scores and D Scores would be negatively related to Verbal CQT Scores.

B. PROCEDURE

A questionnaire packet containing Rokeach's D Scale, the authors' FO Scale, and the Verbal Subtest of the CQT was administered, in the classroom, to 95 freshman and sophomore students enrolled in basic sociology courses at the University of Arizona.

* Received in the Editorial Office, Provincetown, Massachusetts, on July 29, 1966. Copyright, 1967, by The Journal Press.

The FO Scale consisted of 15 Likert response items.¹ Since the FO Scale was an *a priori* instrument and untested, it was decided to perform an item analysis using the responses of the 95 subjects in this study. (The item analysis yielded Product-Moment correlations of individual FO Scale items with total FO Scale Scores ranging from .40 to .62.)

Of the 95 students who responded to the questionnaires, 65 volunteered to serve as subjects for the time estimation part of the study. Upon arrival at the experimental room, each subject was in turn asked to sit at a desk and instructed: "When I say 'start,' read silently from the book open before you, starting at the top of the right hand page. You will be asked some questions about what you have read. Tell me, please, when you think 85 seconds have passed. Any questions? Ready? Start!" It was assumed by the authors that the subjects' reading from a statistics text book and expecting questions on the material would prevent subjects' "counting off" the seconds.

The subjects' stop-watch-recorded time estimates were matched with their marked questionnaires. The correlations and appropriate statistical procedures were performed by the Numerical Analysis Laboratory at the University of Arizona.

C. RESULTS AND DISCUSSION

As indicated in Table 1, the hypothesis that a significant positive relation would be found between dogmatism, as measured by the D Scale, and future orientation, as measured by the FO Scale, was confirmed.² These results sup-

TABLE 1
PRODUCT-MOMENT CORRELATIONS AMONG DOGMATISM (D), FUTURE ORIENTATION (FO),
CQT VERBAL SUBTEST (CQT) SCORES, AND ESTIMATIONS OF AN 85-SECOND DURATION

Scores*	D	FO	CQT
FO	.39***		
CQT	-.07	-.20**	
Time Estimation I (Raw Scores)	-.08	.01	.03
Time Estimation II (Deviation Scores)	.15	.13	.01

* $N = 95$ for D, FO, CQT; $N = 65$ for Time Estimation I and II.

** $p < .05$.

*** $p < .01$.

¹ Sample items: No. 2, "My thinking about vacations to come makes it possible for me to endure the difficulties of every-day-living." No. 13, "It is very important to save money for a rainy day." No. 14, "The trouble with most people today is that they just don't think enough about the future." (Copies of the FO Scale can be acquired by writing to the authors.)

² All correlations reported are Product-Moment.

port Rokeach's (4) and Rokeach and Bonier's (5) conclusion that one of the characteristics of the dogmatic personality structure is future orientation.

There is, as shown in Table 1, a very low negative correlation between Verbal CQT Scores and D Scale Scores. In *The Open and Closed Mind*, Rokeach reports no relationship between dogmatism and intelligence as measured by the American Council on Education Test (5, pp. 190-191). Zagona and Zurcher (9) report a correlation of $-.18$ ($p < .001$) between D Scores and Verbal CQT Scores of 517 college freshmen and sophomores. Both the results of the present study and of the Zagona and Zurcher study, even though the correlations are low and account for little of the variance, point to the need for further research on the relationship of dogmatism to various components of intelligence.

As indicated by the significant negative correlation between FO Scores and CQT Scores as presented in Table 1, future orientation is negatively related to verbal intelligence. These results appear to be in conflict with those of Siegman (6), who found no relationship between scores on his future time perspective questionnaire and scores on the Progressive Matrices (PM) Test. However, since Siegman's group was from another culture (Israel), since the Progressive Matrices Test may measure a factor of intelligence different from that measured by the Verbal Subtest of the CQT, and since his future time perspective items were less abstract than those of the FO Scale, the difference in findings relative to intelligence may be more a function of the samples and questionnaires used than of the variables themselves. A factor analytic approach may help clarify the issue.

The statistical analysis revealed a very low negative correlation between D Scale Scores and time estimates (time estimates in Table 1 are in raw form, as indicated by the stop watch, and are referred to in the table as Time Estimation I). However, a t -test comparison of the mean raw time estimates of the highest 1/3 with the lowest 1/3 D Scores was significant at the .05 level. Similarly, although there was no correlation between raw time estimates and FO Scale Scores, a t -test comparison of the mean raw time estimates for the highest 1/3 with lowest 1/3 FO Scores was significant at the .05 level. These results, though they must be interpreted cautiously, tend to confirm the hypothesized relationship between dogmatism-future orientation, and the perception of time.

Taking a hint from Roberts and Herrmann's (3) report that the variability of the dogmatics' time estimates may be more revealing than the mean of those measures, the authors decided to recast subjects' raw time estimates as deviation scores from the 85-second target time (referred to in Table 1 as

Time Estimation II), and to recalculate the correlations. The results of this analysis, presented in Table 1, produced higher correlations than those run with Time Estimation I—a positive correlation of .15 between D Scores and deviation time estimates, and a positive correlation of .13 between FO Scores and deviation time estimates. A *t*-test comparison of the mean deviation time estimates of the highest 1/3 with the lowest 1/3 FO Scores was significant at the .05 level. Also, a *t*-test comparison of the mean deviation time estimates of the highest 1/3 and lowest 1/3 D Scores showed significance at the .05 level.

Though the statistical relationships are low and must be cautiously offered, it appears that both Time Estimation I and Time Estimation II demonstrate the hypothesized relationship with dogmatism and future orientation. The highest 1/3 of the D and FO Scorers tend to underestimate, to a greater degree than the lowest 1/3 of the D and FO Scorers, the duration of 85 seconds (mean estimations: highest 1/3 D Scorers, 55.52 seconds; lowest 1/3 D Scorers, 66.57 seconds; highest 1/3 FO Scorers, 58.96 seconds; lowest 1/3 FO Scorers, 70.10 seconds). In addition to the phenomenon of underestimation, the highest 1/3 D and highest 1/3 FO Scorers show a greater variability of estimates from 85 seconds than the lowest 1/3 D and FO Scorers (mean deviation scores: highest 1/3 D Scorers, 29.95 seconds; lowest 1/3 D Scorers, 22.62 seconds; highest 1/3 FO Scorers, 28.65 seconds; lowest 1/3 FO Scorers, 19.19 seconds). Thus those subjects who show an elevation of D or FO Scores may not simply and inevitably collapse their estimates of time, or have, as Siegman (6) says, "a faster internal clock." Rather, there may exist a general disturbance of time perception, perhaps linked with anxiety, that stimulates some individuals scoring high on the D and FO Scales to overestimate, others to underestimate, the time duration. Rokeach (5), when discussing future and past orientation of the dogmatic, and Roberts and Herrmann (3) point to this issue of variability in time perception, which they felt to be less marked in the low dogmatic individual. The data presented here by no means support the significance of "deviation" differences to the exclusion of "underestimation," or *vice versa*, but rather highlight the probable interaction of the two.

As shown in Table 1, neither Time Estimation I nor Time Estimation II demonstrated any relationship to Verbal CQT Scores. If there is a component of general intelligence related to the perception of time (85 seconds), it apparently is not verbal ability.

The FO Scale is still exploratory and in need of further cross-validation and reliability analysis. Also limiting this study was the fact that only one time interval was presented to subjects for estimation. Furthermore, most of

the correlations among the variables were relatively low and accounted for little of the variance. Nevertheless, the pattern of results, though certainly not conclusive, tends to confirm the hypothesis that dogmatism is related to future orientation, and that dogmatism and future orientation are negatively related to verbal intelligence and the estimation of time.

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INDIVIDUAL DIFFERENCES IN RESPONSES TO THE SEMANTIC DIFFERENTIAL*¹

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A. INTRODUCTION

Of the various standardized scales that have been developed by psychologists in recent years, the Semantic Differential has doubtless been as widely adopted as any. It has been utilized by an extremely large number of psychologists and in an extensive array of research settings. Its appeal is probably twofold: first of all, the instrument is wedded to a detailed and persuasive theory of connotative meaning; second, as it is typically used, the instrument permits the unequivocal assignment of three numbers to any concept that a *S* evaluates, one number each for the position of the concept on the evaluative, activity, and potency dimensions that are presumed to underlie the subscales.

In a number of investigations, summarized in Osgood (3) and in Osgood, Suci, and Tannenbaum (4), these same three dimensions have been found again and again when factor analyses were performed upon the correlations among the subscales of the Semantic Differential. Evaluative, activity, and potency factors appeared even when the *Ss* were drawn from widely different cultures or when the concepts represented subject matters that differed markedly in their content. Nevertheless, two somewhat disturbing outcomes have characterized these results: first, while the evaluative factor is consistently evident, the potency and activity factors appear to be less stable; second, when the subject matter from which the concepts are drawn is varied, the same subscale is often loaded on different factors. For example, in different studies it is usually possible to justify labeling one factor as reflecting evaluative judgments and it is frequently possible to find separate activity and potency factors as well; however, a particular subscale may fall in the evaluative factor in one study, in the activity factor in another, and in the potency factor in a third. Osgood, Suci, and Tannenbaum have commented on this outcome as follows:

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It is clear that there is a high degree of concept-scale interaction; the meanings of scales and their relations to other scales vary considerably with the concept being judged. . . . One general principle governing this concept-scale interaction seems to be that the more evaluative . . . the concept being judged, the more meaning of all scales shifts toward evaluative connotation. This may be phrased as a more general hypothesis: *In the process of human judgment, all scales tend to shift in meaning toward parallelism with the dominant (characteristic) attribute of the concept being judged* (4, pp. 187-188, italics original).

Such an outcome is of concern for investigators interested in individual differences, for it suggests the possibility that there may be an individual-scale interaction as well, such that different individuals utilize the constituent subscales of the Semantic Differential differently when judging the same concepts. If this were true, then the empirically unambiguous assignment of three coordinates to each concept for each *S* might violate the natural groupings among the subscales that exist for particular *Ss*. The present paper reports data that suggest there is, indeed, such an individual-scale interaction.

B. METHOD

The data were collected as part of an intensive investigation of the effects of verbal context upon connotative meaning. The Semantic Differential was employed in the hope that changes in the connotations of a concept as the verbal context changed might be revealed by shifts in the position of the concept on the three dimensions of that instrument.

1. Subjects

Twelve undergraduate students at Clark University participated in seven one-hour experimental sessions. All *Ss* were paid volunteers from undergraduate psychology classes.

2. Semantic Differential Subscales

On the basis of the results reported by Osgood, Suci, and Tannenbaum (4), nine antonym-pairs were selected in such a way that three pairs (good-bad, valuable-worthless, and admirable-deplorable) appeared to be principally loaded on the evaluative factors; three pairs (active-passive, restless-quiet, and quick-slow) were principally loaded on the activity factor; and three pairs (intense-mild, powerful-powerless, and rugged-delicate) were loaded chiefly on the potency factor.

3. *Concepts Rated*

In the first of the experimental sessions, each *S* described eight different individuals whom he knew, and who fitted into the eight role categories that are generated by requiring half of the other people to be men and half women; half to be older than *S* and half to be the same age; half to be people *S* likes and half people he dislikes. These descriptions were subsequently examined to permit the selection of six interpersonal traits that met the following criteria: (*a*) each trait was used at least once by all 12 *S*s; (*b*) the traits appeared to the experimenters to have qualitatively different meanings; and (*c*) several pairs of the traits could be interpreted by some *S*s as incompatible. The six traits so selected were *witty*, *intelligent*, *considerate*, *loud*, *domineering*, and *self-centered*.

In a subsequent session, *S*s were presented with each of these six traits singly, and with all possible combinations of the traits—a total of 63 different sets. Given each set of traits as a description of another person, *S* was asked to estimate the position of that person on the nine subscales of the Semantic Differential and to use the typical bipolar, graphic rating scales in his judgments.

4. *Method of Analysis*

Since 63 different descriptions were evaluated, it was possible to determine the correlations among the nine subscales of the Semantic Differential for each *S*.³ For each *S*, the resulting correlation matrix was factor analyzed by the Multiple Group method. In this method, the variables in a correlation matrix are grouped, either according to some *a priori* criterion or by inspecting the empirical correlations; the utility of these groups as factors that will reproduce the correlations among variables is then examined. As Harman points out (1, Chap. II), this method permits one to examine whether a correlation matrix can be reproduced by some hypothesized set of factors. In the present instance, of course, the subscales were grouped according to their presumed organization into evaluative, activity, and potency factors. For each *S*, the following procedure was employed:

³ Since each trait appeared in 32 of the 63 sets that were rated, the correlations among the subscales were probably inflated above those that would have been found if independent concepts had been rated. Nevertheless, if the hypothesized three dimensions were actually affecting *S*s' judgments, a factor analysis of the matrix of these inflated correlations should yield the dimensions in at least as pure a form as would a factor analysis of correlations based upon independent concepts.

(a) With the subscales grouped as described above, an orthogonal three-factor solution was sought. Such a solution was possible for five *Ss*. The residual matrix of each of these five *Ss* was examined; in three of the five cases, a substantial number of these residual correlations exceeded .10. For each of these *Ss*, the correlation matrices were examined empirically, the scales were regrouped, and an orthogonal three-factor solution was obtained from these empirical groupings.

(b) For seven *Ss* the correlation matrices were not factorable by the Osgood three-factor grouping. For these *Ss* a two-factor solution was attempted, with the use of the three evaluative subscales as one group and the remaining six subscales as a combined activity-potency group. This grouping yielded two orthogonal factors for each *S*. The residual matrices of four of these *Ss* appeared to be minimal, and the solution was judged to be satisfactory. The residual matrices of three *Ss*, however, evidenced several correlations of substantial size. No regrouping of subscales into two factors sufficed to reduce the residual correlations for these *Ss*; therefore, an empirical grouping was sought that would reduce these residual correlations. For one *S*, four factors were necessary to eliminate one residual correlation greater than .20; the remaining two matrices required only three factors.

C. RESULTS

Table 1 presents, for each *S*, the factor loadings of the nine subscales of the Semantic Differential on each of the factors obtained. None of the *Ss* showed the expected grouping of subscales into separate evaluative, activity, and potency factors. The closest approximation to such a grouping was the correlation matrix of subject I, which showed a clear evaluative factor and a combined activity-potency factor. For every other *S*, (a) some of the presumed activity or potency subscales were more highly loaded on the evaluative factor than on the remaining factors or (b) the nonevaluative subscales did not divide neatly into separate activity and potency factors. The details of these somewhat complicated results are best explicated by discussing the *a priori* evaluative factor separately from the other two.

1. *The Evaluative Subscales*

For every *S* but one, the evaluative subscales were highly intercorrelated. Thus, except for subject F, the three evaluative subscales were highly loaded on the first factor; for that *S*, good-bad was principally loaded on a fourth factor, but the other two evaluative subscales were loaded only on the first factor. Individual differences in the nature of the hypothesized evaluative factor

TABLE 1
 FINAL ORTHOGONAL FACTOR LOADINGS

Subscales											
Subject	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
A	I	.86	.90	.96	.04	.21	.28	.09	.01	.02	.55
	II	.00	.00	.00	.64	.11	.29	.49	.53	.06	.35
	III	.01	.05	.02	.01	.01	.04	.02	.00	.29	.07
B	I	.70	.70	.67	.35	.44	.01	.37	.02	X*	.74
	II	.01	.00	.01	.16	.22	.28	.24	.01	X	.20
	III	.07	.01	.04	.00	.00	.05	.07	.32	X	.09
C	I	.69	.45	.69	.04	.10	.04	.20	.06	.09	.45
	II	.00	.04	.04	.55	.38	.01	.67	.42	.58	.51
	III	.09	.08	.00	.08	.01	.25	.01	.02	.08	.12
D	I	.38	.85	.83	.01	.01	.00	.00	.01	.05	.44
	II	.01	.01	.00	.59	.40	.36	.34	.11	.24	.42
	III	.00	.00	.00	.11	.00	.01	.15	.44	.01	.15
E	I	.88	.77	.83	.01	.01	.00	.00	.01	.05	.45
	II	.00	.01	.02	.34	.27	.28	.46	.35	.45	.36
	III	.01	.00	.00	.41	.34	.00	.00	.00	.29	.17
F	I	.09	.88	.88	.07	.22	.41	.09	.08	.00	.45
	II	.01	.01	.01	.70	.27	.24	.66	.61	.31	.46
	III	.02	.01	.01	.04	.15	.02	.01	.04	.31	.10
	IV	.14	.00	.00	.01	.01	.18	.01	.13	.00	.08
G	I	.96	.90	.98	.00	.35	.00	.23	.10	.27	.62
	II	.00	.00	.00	.23	.38	.28	.22	.37	.38	.30
	III	.00	.00	.00	.34	.00	.00	.32	.00	.00	.11
H	I	.86	.85	.83	.00	.02	.28	.00	.10	.01	.57
	II	.00	.00	.00	.44	.21	.29	.12	.40	.45	.37
	III	.01	.00	.02	.04	.17	.00	.20	.02	.00	.09
I	I	.92	.92	.24	.03	.17	.07	.13	.03	.10	.44
	II	.00	.00	.00	.83	.86	.13	.74	.70	.81	.54
J	I	.81	.81	.85	.03	.32	.01	.20	.49	.18	.58
	II	.00	.01	.01	.58	.38	.50	.53	.08	.53	.41
K	I	.77	.85	.86	.00	.21	.52	.04	.01	.05	.51
	II	.00	.00	.00	.74	.46	.15	.64	.59	.66	.50
L	I	.70	.90	.79	.17	.34	.12	.20	.37	.18	.55
	II	.01	.00	.00	.74	.48	.61	.72	.06	.58	.47

S did not discriminate on this subscale; it was excluded from the factor analysis of her correlation matrix.

Note. (a) = Factor; (b) = Good-bad; (c) = Valuable-worthless; (d) = Admire-deplorable; (e) = Active-passive; (f) = Restless-quiet; (g) = Quick-slow; (h) = Intense-mild; (i) = Powerful-powerless; (j) = Rugged-delicate; and (k) = per cent Communality.

were revealed principally in the fact that other subscales than those hypothesized were also loaded principally on the first factor. For only four of the 12 Ss was this factor composed uniquely of the three *a priori* evaluative items.

Every subscale except rugged-delicate was loaded on the evaluative factor for one or more of the remaining eight *Ss*.

To determine the agreement among *Ss* in factor loadings on this first factor, the nine subscales were ranked according to their loadings on that factor for each *S*, and a coefficient of concordance computed on these 12 sets of ranks. The resulting *W* of .702 was significant at the .01 level; it corresponded to a mean Spearman's rank correlation of .68. This high degree of correspondence might have come about for one of two reasons: (*a*) a general similarity among *Ss* in the factor loadings of all nine items or (*b*) a pattern in which, for most *Ss*, the three evaluative scales had high loadings on the factor and the six nonevaluative scales low ones, but minimal similarity of loadings obtained among the subscales within each of these two broad groups. To examine which condition held true for these data, the nine subscales were divided into the *a priori* evaluative and nonevaluative sets. For each *S*, the loadings of subscales on Factor 1 within each of these sets were ranked, and coefficients of concordance were computed within each set of subscales separately. For the evaluative and the activity-potency groupings, respectively, the coefficients were .09 and .17 (corresponding to mean rank correlations of .01 and .09); neither coefficient differed significantly from zero. Thus, the similarity of structure across *Ss* in the nature of the first factor appears to derive principally from the high loading on that factor of the evaluative subscales, but not from a general correspondence in the loadings of all nine subscales.

2. *The Evaluative and Activity Subscales*

For the six subscales that were considered, *a priori* to represent the activity and potency dimensions, Table 1 reveals no factor pattern common to all *Ss* or even to a substantial proportion of them. For each pair of these six subscales, there was at least one *S* for whom the two subscales were jointly loaded on a common factor and at least one for whom they were not. The only characteristic of the second and third factors that was common for all *Ss* was that they did not include the *a priori* evaluative subscales; otherwise, widespread individual differences are evident in these results.

D. DISCUSSION

The above results may be interpreted both as supporting a part of Osgood's position that his factor system holds across people, and as questioning the usefulness of the Semantic Differential as an all purpose measure of connotative meaning.

On the one hand, an evaluative factor was clearly evident for every *S*, even

though the nonevaluative subscales showed markedly different factor loadings for different Ss. This outcome supports the common observation that the evaluative factor dominates in such judgments, and confirms the marked consistency in the constituent subscales of that factor.

On the other hand, our interest when this experiment was undertaken was to examine the differences between the connotations of an interpersonal trait when presented singly and its connotations when presented in a larger set of traits. The Semantic Differential appeared to be an instrument that would permit the operational examination of this problem. As a matter of fact, Osgood (2, p. 180) speaks of this empirical phenomenon as the problem of "word mixture"; Osgood, Suci, and Tannenbaum (4, p. 207) provide a theoretical equation by which the position of a pair of traits on each dimension of the "semantic space" defined by their instrument may be predicted from the positions of the single traits in that pair. In order that this equation may be applied, it is necessary that one assume that the subscales of the Semantic Differential define three different continua. However, none of these 12 Ss showed factor patterns that corresponded to the semantic space as hypothesized.

In short, it appears that the three-dimensional space presumed to underlie the Semantic Differential did not characterize the judgments of these Ss. More generally, on the basis of these results it appears likely that the typical technique of scoring the Semantic Differential to yield three scores for the connotative meaning of a concept is highly questionable, for it ignores important differences among individuals in the interpretations that they give to the various subscales.

E. SUMMARY

Sixty-three sets of traits were presented to 12 Ss who rated each set on a nine-item form of the Semantic Differential. For each S the correlations among the subscales of the Semantic Differential were factor analyzed. For four Ss, two factors were required to reproduce the correlation matrix; for seven Ss, three factors; and for one S, four factors were required. A clear evaluative factor was evident for each S, although the component subscales of the factor were not identical for all Ss. The expected separate evaluative and potency factors did not appear for any S.

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PREDICTING SELF-ASSESSED SOCIAL LEADERSHIP^a IN A NEW CULTURE WITH THE MMPI*¹

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A. INTRODUCTION

The aim of this study was to validate the social leadership indices of the MMPI with subjects working in an alien culture. Seven special scales were employed. These scales served as indices for high social interaction in previous research summarized by Dahlstrom and Welsh in *An MMPI Handbook* (5). Except for one scale, they were developed with subjects drawn from a normal, rather than clinical, population. The subjects were mostly college and high school students whose social behavior was observed and rated. The Peace Corps volunteers form a suitable group for a validity study for these reasons: most are college-trained, their working environment puts a premium on social skills, the MMPI had been administered to some before they went overseas.

Predicting social leadership of an individual must take into account the interaction between personality and situational variables: the condition under which the potential for social leadership can be fully realized should be specified. In community development, this situation arises when the volunteer finds that the community members have very little skill and willingness to undertake a cooperative venture. He perceives that his own social activity is quite instrumental to the attainment of the group goal. Working with such a loosely-knit group, the person with high potential for social leadership must attempt to increase group cohesion through friendly give-and-take communication with every member. The one with low potential must remain relatively passive. On the other hand, where the community members already possess the necessary skills and enthusiasm for a community project, the volunteer's sociability would make little difference in influencing the outcome. Other things being equal, the socially active volunteer will be able to contribute to goal attainment

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only as much as the less active one, since group cohesiveness is already strong. High social activity in this case may be more the result of working with a cohesive group rather than the product of a strong personality disposition. Therefore, this study will examine the nature of the group with which the volunteer is working.

B. METHOD

1. *Scales*

Seven special scales in the MMPI were chosen as predictors. The basis for selecting these indices was their previous use in empirical work on social interaction. A description of the scales and the summary of empirical studies follows (each description was abstracted from that made by Dahlstrom and Welsh (5) :

1. *Manifest anxiety scale* (14). 50 items. Five judges selected items indicative of manifest anxiety from a subset of about 200 items. In college samples, high scores were related to high social interaction (3, 10).

2. *Dominance, revised* (8). 16 items. Derived from groups of subjects who were rated by peers on social dominance. Social dominance was defined in terms of social initiative, leadership ability, persistence, strong and forceful actions. Scale has been shown to be successful in predicting staff ratings and peer nominations for dominance and in identifying outstanding leaders in high school program.

3. *Ego strength* (2). 68 items. Criterion was response to treatment; items were assumed to be indicative of difference in strength of ego structure. Thirty-three cases were used in item selection. A measure of control over hostility. Rosen and Rosen (12) found that this scale separated successful union business agents from the unsuccessful.

4. *Leadership* (7). 50 items. These items were used in conjunction with the development of the California Psychological inventory.

5. *Social responsibility, revised* (9). 20 items. Item selection was based on subjects identified by peer nominations among high school and college students. "This scale has also stood up well in new groups reflecting assessment staff ratings of responsibility and character integration, nominations for responsibility and for good citizenship, subgroups of school disciplinary problems, and self-ratings on concern for group activities" (5, p. 360).

6. *Social participation* (6). 25 items. Derived on high school students who fell at the extremes of activity in extracurricular programs.

7. *Social presence* (7). 21 items. "This scale was developed originally on a judgmental and internal consistency basis in an attempt to evaluate personal

charm, poise, spontaneity, and vivacity" (5, p. 360). These attributes were judged by the assessment staff of the Institute for Personality Assessment Research and school personnel.

2. *Subjects*

The subjects were 75 Peace Corps volunteers working in nine Latin American countries. There was no attempt to draw a random sample, since the findings of validity studies, such as this one, can never be generalized to cover individuals performing in new situations. Rather, the subject was chosen (*a*) if he had taken the MMPI during training and his answer sheets were in the files of the Peace Corps, Washington office, (*b*) if he had completed overseas the questionnaire from which the criterion and control variables were derived.

There were 62 males and 13 females with a median age of 24 and an average of 15 months overseas service. They participated in groups with these typical projects: first, construction of community facilities: schools, roads, bridges, water supply; second, farm cooperatives and agricultural extension; third, public health and sanitation.

3. *Criterion Variable*

The criterion in this study was the index of social leadership based on the volunteer's self-report on a mail questionnaire. This questionnaire, entitled "What to expect in community development," was developed to elicit information on task and social activities actually engaged in by the volunteer in the field. The cover letter emphasized how prospective members of the Peace Corps could benefit from the replies to the questionnaire and that individual answers would be kept in strict confidence.

The Peace Corps Representative, who is the official head of the volunteers in the host country, was instructed to administer the questionnaires. In some countries, the questionnaires were completed in a group setting during conferences; in others, they were mailed out to volunteers. A total of 221 usable questionnaires were returned. For 75 respondents, completed MMPI answer sheets were available to be scored with the special scales.

The index of self-assessed social leadership is the total score that is obtained by adding the points given to an item response. These items, as they appear on the questionnaire, are found in Appendix 1.²

² Appendices 1 and 2 have been deposited as Document number 9580 with the ADI Auxiliary Publications Project, Photoduplication Service, Library of Congress, Washington, D.C. 20540. A copy may be secured by citing the Document number and by remitting \$1.25 for photoprints, or \$1.25 for 35-mm microfilm. Advance payment is required. Make checks or money orders payable to: Chief, Photoduplication Service, Library of Congress.

4. Control Variable

The extent of the volunteer's social activities with host nationals was hypothesized to be related in part to his perception of cohesion in the group he was advising. Where he discovered group cohesiveness to be weak, the individual with high potential for social leadership should readily use social interaction as a means to increase cooperation. He would be more active than the one with low potential. On the other hand, where strong group cohesion was already present, both types of individuals would be carried along by the group's enthusiasm; and sociability could not be predicted from knowledge of individual disposition.

A measure of group cohesion was developed from the items listed in Appendix 2.³ A dichotomy was made between strong and weak cohesiveness in the group. *Strong cohesion* was the report of "full coordination of effort" for item #5; "always or often" for item #11; "always or often" for item #12. *Weak cohesion* was the combination of all other item responses.

C. RESULTS

Table 1 (A) presents the multiple regression analysis on the whole sample without the introduction of the control variable "weak group cohesion." The *dominance* scale had a validity coefficient of .21, $p < .05$; the *social participation* scale had .30, $p < .05$; the *leadership* scale correlated positively with the criterion but the r was not significant. The rest of the scales revealed zero coefficients. The multiple R was .34.

When S s were split according to their perception of cohesiveness in their own groups, 36 were classified under "Weak Group Cohesion." Another multiple regression analysis was run with these S s and the results are shown in Table 1 (B). The multiple R increased to .44. The *social participation* scale had about the same validity coefficient, $r = .32$, $p < .05$. However, the r for the *dominance* scale was reduced considerably, while the rest of the scales remained stable. The procedure suggested by Albright, Glennon, and Smith (1) was followed and an attempt was made to select two scales that contributed most to the multiple R . From Table 1, these scales were *social participation* and *social presence*.

D. DISCUSSION

The MMPI as a predictor may prove more useful and meaningful than before if one focuses attention on scales originally developed with normal, rather than clinical, subjects. The results demonstrated that it makes sense to

³ See Footnote 2.

TABLE 1
VALIDITY COEFFICIENTS, BETA WEIGHTS, AND INTERCORRELATIONS FOR SEVEN MMPI
SPECIAL SCALES AGAINST A SOCIAL LEADERSHIP CRITERION

Scale	1	2	3	4	5	6	7	8
<i>A Without the control variable, N = 75^a</i>								
3	.21*	.073						
4	.06	— .210	.57					
5	— .04	— .005	.00	.13				
6	.30*	.341	.66	.59	— .03			
7	— .03	.066	— .41	— .48	— .42	— .28		
8	.16	.084	.68	.65	.24	.59	— .73	
9	.05	.018	.31	.37	.22	.24	— .46	.50
<i>B. "Weak group cohesion" condition, N = 36^b</i>								
3	.07	— .307						
4	.08	— .308	.53					
5	.00	.006	.14	— .06				
6	.32 ⁺	.644	.67	.72	— .04			
7	— .03	.028	— .40	— .45	— .57	— .32		
8	.16	.212	.74	.63	.27	.67	— .74	
9	.00	— .114	.27	.26	.14	.28	— .41	.40

Note. Social leadership criterion; 2. beta weight; 3. Dominance, revised, 4. Social presence, 5. Social responsibility, revised, 6. Social participation; 7. Manifest anxiety; 8. Leadership; 9. Ego strength.

⁺ $p < .05$, one-tailed test.

^a Multiple R = .34.

^b Multiple R = .44.

employ the *social participation* scale instead of the *ego strength* scale in assessing the prospects of a community development trainee. The *social presence* scale improved the estimate but the *manifest anxiety* scale did not.

In a separate analysis, the clinical scales were correlated with the social leadership criterion using an N of 91 for whom machine-scored profile sheets were available. Except for one scale, the product-moment correlations were close to zero. The *Sc* scale had an r of $-.21$, $p < .05$, two-tailed test. In validation studies cited by Dahlstrom and Welsh (5), high scorers on this scale had been described by clinical psychologists as immature, while the low scorers were regarded as friendly, adaptable, cheerful, and good-natured. In another study the scale was found to have a significant negative correlation with a Group Contribution Inventory which evaluated "the capacity of persons to make social contributions to a group in terms of leadership, readiness to participate in the group's effort, and group support and defense" (5, p. 361). A factor analytic study, as summarized by Dahlstrom and Welsh (5), showed the loadings of the special scales: *social participation* with a negative loading on social introversion; both *social participation* and *dominance* have loadings on a factor of social extraversion. What emerges from these empirical studies including the present one is the picture of an individual, with a strong extra-

verted disposition, demonstrating well-developed social skills. It is to the credit of the MMPI that the extraversion-introversion dimension can be significantly related to social behavior in spite of the highly select sample in the present study and the overemphasis on social extraversion in the work of a community development advisor.

However, the present analysis was not limited to a trait description of personality; it also specified the conditions under which the personality interacts with the social environment to produce an effect. It was argued that if "weak" group cohesion existed, then friendly give-and-take communication between the advisor and hosts was realistically instrumental to achieving the group goal. Therefore, the prediction was made that when "weak" group cohesion was perceived, the sociable individual would increase interaction with hosts, while the less sociable would remain passive. Partial support for this assumption may be found in the increase of the multiple R from .34 to .44 under the "weak group cohesion" condition, despite the reduced N .

Finally, the multiple R of .44 in itself compares favorably with the predictive validities of successful personality inventories. The "most successful" one, reported by Cronbach (4), had an r of .40. In the validation of the social participation scale (a 100-item questionnaire which included 32 items from the MMPI), Gough (6) obtained an r of .42. Using the California F scale to predict successful performance by Peace Corps volunteers teaching in Nigeria, Mischel (11) found an r of —.45. Stein (13) related three psychological measures to effectiveness of Peace Corps Community Development advisors in Colombia and reported a multiple R of .43.

E. SUMMARY

Seven MMPI special scales served as predictors of social leadership displayed by 75 Peace Corps volunteers working in nine Latin American countries. Ss were advisors to local groups engaged in community development; therefore, their social activities complemented task performance. A control variable, "Weak Group Cohesion," was hypothesized to be related in part to social leadership. Perceiving "weak" group cohesiveness, the high sociable should attempt to develop cooperation through increased social interaction, while the low sociable should remain passive. Results show that the multiple R increased from .34 to .44 with the use of the control variable despite the reduced N . Two special scales that contributed most to the R were *social participation* and *social presence*.

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SOME EFFECTS OF VICTORY OR DEFEAT UPON^{*}
PERCEPTION OF POLITICAL CANDIDATES^{* 1}

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A. INTRODUCTION

The semantic differential was originally developed to assess the connotative "meaning" of any concept in the individual's psychological world (7). However, when the concept being rated is a political candidate and when, in addition, the scales of the semantic differential employ adjectives often used to describe candidates by political observers in the popular press (e.g., ruthless, extremist, etc.), the profiles obtained on the differential may give a valid indication of what has been referred to as the "image" of the candidate. The purpose of this study was to examine, through the use of selected semantic scales, changes in the image of national and state candidates as a function of their election to or defeat for public office.

Several research studies are reported which have demonstrated the efficacy of the semantic differential as a valuable instrument for obtaining the image of political candidates. In their initial monograph, *The Measurement of Meaning*, Osgood *et al.* showed that the typical factors of evaluation, potency, and activity provided an adequate frame of reference for conceptualizing the "image" of political candidates and personalities in the 1952 election, and also provided a rather interesting "image" of some of the political issues of that campaign.

In a study of the 1960 election, McGrath and McGrath (5) constructed a semantic differential questionnaire in which both polar adjectives of each scale had positive connotations (cooperative-independent), or both adjectives had negative connotations (indecisive-cocky). The McGraths were concerned mainly with whether the image of a political candidate is determined primarily by actual characteristics of the candidate himself (the so-called "image" theory) or is determined by the subject imputing to the candidate attributes that are consonant with the subject's own self-percept—regardless of whether or not

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¹ We wish to express our appreciation to Dr. Roberta S. Sigel for her valuable comments on the manuscript.

the candidate does, in fact, possess these characteristics. This "balance" or "consistency" approach finds wide support in attitude and social perception literature [see, e.g., Heider (3), Newcomb (6), and Festinger (2)]. However, despite the plethora of studies supporting the consistency principle in social perception, the McGraths concluded that the image theory provided a more tenable explanation of their results. Specifically, for the majority of traits used in their semantic differential questionnaire, subjects did not distort their perceptions of political candidates toward a greater consistency with their own self-percept as would be predicted by the balance or consistency theory.

The McGraths reached their conclusion from the fact that on the majority of the trait scales used in their semantic differential questionnaire, extremely bipartisan subjects (Democratic and Republican party workers at a college campus) agreed very closely as to the image presented by any given candidate. Sigel (10) has criticized the McGraths' study and their conclusions supporting the image theory because of their inclusion of many adjective scales in the semantic differential that were not likely to generate conflict or create stress regarding politically relevant attributes. Hence, Sigel argues that the ratings made of a political candidate on these scales would not be expected to differentiate between bipartisan subjects. By allowing her respondents to select their own descriptive traits, Sigel presents a partial replication of the McGrath and McGrath study and concludes that the balance or consistency theory (perceiver determined) may be more applicable when assessing the candidate's political image, but that the image theory (stimulus determined) is more efficacious when assessing the nonpolitical aspects of the candidate's personality and physical appearance.

Although the focus of our report is not primarily upon this apparent controversy between a balance and image theory of political perception, the two previously mentioned studies do demonstrate a highly creative and fruitful use of the semantic differential in assessing the image of political candidates. In addition, Sigel's comments regarding the selection of adjective scales to be used in the construction of semantic differential questionnaires are quite relevant to our own findings on political images and were also helpful in reconciling these findings with other political image studies.

While the assessment of a candidate's political image is itself a significant problem in studying social-political behavior, it is even more interesting to attempt to relate this political image to the respondents' behavior—voting or otherwise—toward the political candidate. It is also of interest to attempt to relate changes in the image to such political factors as the defeat or election of the candidate and the partisan commitment of the respondent himself. For example, Stricker (11) found that he could predict voting behavior for approx-

imately 90 per cent of his subjects by using the evaluative factor of the semantic differential or by using a "D" score between ratings of the candidate and an "ideal president," but only if the subjects had previously decided upon their choice of candidates. The semantic differential factors of activity and potency were unrelated to actual voting behavior and did not enhance the efficacy of prediction of the evaluative factor scores or the "D" scores.

In a second study, Stricker (12) obtained similar results. However, in this study he also looked at mean semantic differential evaluations of the political candidates before and after the elections. Stricker found that prior to the election the images of two candidates (Nixon and Kennedy) were quite distinct and evaluations of the chosen candidate were more favorable than evaluations of the opposition candidate. Postelection data, on the other hand, indicated that evaluation of *both* candidates increased in favorability and, in addition, the image of both candidates increased significantly in similarity. In a study of the 1960 elections, Raven and Gallo (9) also report that semantic differential evaluations of both Kennedy and Nixon showed significant pre- to postelection increases in favorability when these candidates were rated by members of their own, as well as the opposing political party. Additional studies by Korchin (4) and Paul (8) found an increase in favorability toward the winning candidate in national elections, but did not obtain the concomitant increases in favorability toward the defeated candidate as were found in the Stricker and in the Raven and Gallo studies.

With the use of semantic differential ratings, the present study investigated pre- to postelection changes in the political image of national and state candidates in the 1964 election. Included among the semantic differential scales were adjective scales representing the evaluative, activity, and potency factors of the semantic differential.

In line with Sigel's notions regarding the candidate's "personal" *vs.* his "political image," a second set of adjective scales was included which were *a priori* thought to be more descriptive of the physical or personal appearance of the candidate. The third set of scales interspersed among the other adjectives included those traits and characteristics that often appeared in the popular news media as descriptions of the political abilities or attributes of the candidate: i.e., his "political image."

B. PROCEDURE

Two groups of subjects were given the semantic differential questionnaire plus several additional "buffer" tests approximately one week prior to the 1964 election and again one week after the election, although not all subjects in each group were present at both testing sessions. The subjects in Group I

were introductory social psychology students at Wayne State University. Thirty-one students in Group I completed the pre-election questionnaire, while an additional five students completed the second postelection questionnaire. Approximately half of the subjects in Group I were males. The majority of subjects in Group I (68 per cent) indicated that they would vote as a member of the Democratic party, although the age of these subjects obviated the possibility of many of them actually being able to vote in the election. The subjects in Group II were 21 male industrial workers enrolled in a night course in industrial psychology given by a local community college. This group was considerably older than the undergraduates in Group I and again the majority (67 per cent) indicated that they favored the Democratic party. In Group II, 21 subjects completed the pre-election questionnaire and two additional subjects completed the postelection questionnaire.

The subjects were not required to identify themselves by name, but were asked only to indicate their sex and their preference for one of the two political parties. Each subject then rated on the 20 six-step semantic differential scales the two presidential candidates (Johnson and Goldwater), the two Michigan gubernatorial candidates (Romney and Staebler), and two Michigan senatorial candidates (Hart and Peterson). These same six candidates were rated again on identical questionnaires by the subjects in both Groups I and II approximately one week after the elections.

As was mentioned earlier, the scales provided image profiles on three different subsets of semantic differential scales. The scales chosen as representative of Osgood's evaluation, activity, and potency factors were good-bad; active-passive; and strong-weak, respectively. The scales were taken directly from the factor analysis given by Osgood in the *Measurement of Meaning* monograph and were also the same scales used in the Stricker study. The division of the remaining scales into "personal image" and "political image" was somewhat arbitrary, being based most often on the appearance or use of these traits in the news media as descriptions of the campaign tactics or the physical appearance of the candidate. The authors were assisted in the selection of these scales by submitting a larger pool of adjective traits to party workers at the Detroit campaign headquarters and asking these individuals to eliminate or suggest additional characteristics that they felt might be relevant to the study.²

Ratings on all 20 scales of the semantic differential were intercorrelated separately for each of the six candidates. These intercorrelation matrices indicated that a candidate-by-scale interaction was present in the semantic differ-

² We would like to thank Miss Vivian Smorgan for her assistance in this phase of the research.

ential ratings. That is, when subjects rated the political image of certain candidates, both personal and political attributes often collapsed into one large general factor which may or may not have included any or all combinations of Osgood's three semantic differential "meaning" factors. On the other hand, intercorrelations of the scales that were performed on ratings of other candidates showed highly specific clusters of the various scales that again were quite specific to the candidate being rated. Hence, the mean differences shown in Table 1 are presented separately for the ratings made of each of the six candidates on each of the 20 adjective scales. The labeling of the scales as personal or political image scales was done with some caution, since it was known that this crucial candidate-by-scale interaction was present and needed further clarification.

C. RESULTS

Since two different groups of subjects were used in this study, preliminary analyses were undertaken to determine whether there were any systematic differences between the groups in their ratings of the candidates. Despite the age and occupational differences between the two groups of subjects, almost identical pre- to postelection changes were found in the ratings made of the various political candidates. Thus, the scores from the two groups were combined into one sample. The political party preference of the subjects also had no noticeable effects upon mean differences between the pre- and postelection ratings of the various candidates. Hence, interpretations based on mean differences did not consider the party preference of the subjects. It is recognized, however, that this variable is still highly crucial in political image studies that employ other methods of data analysis (e.g., correlation coefficients) or studies that use subjects who are highly committed to political parties.

The mean difference scores between post- and pre-election ratings of the six candidates on each of the 20 semantic differential scales are shown in Table 1. Each scale was scored from one to six with the highest score being assigned to that adjective listed in the left-hand column of the table. Thus, on the postratings minus preratings a positive difference always indicates an increase in the direction of the first-listed adjective on that scale, while a negative difference indicates a pre- to postelection difference in the direction of the second-listed adjective.

1. *Changes in the Political Image Scales*

The data presented in Table 1 indicate that the significant changes that did occur from pre- to postelection ratings generally were changes on the "political" image scales and dealt mainly with the perceived political power of

TABLE 1
MEAN DIFFERENCE (POSTELECTION MINUS PRE-ELECTION) RATINGS OF THE VARIOUS CANDIDATES

Measure	President		Governor		Senator	
	LBJ ^a <i>vs.</i> Goldwater		Romney <i>vs.</i> Staebler ^a		Hart ^a <i>vs.</i> Peterson ^b	
Semantic Differential factors						
Evaluation (good-bad)	.31	-.11	.00	-.17	-.11	-.28
Potency (strong-weak)	.27	-.65*	.41*	.08	.00	-.82*
Activity (active-passive)	.13	-.21	.05	.01	-.07	-.34
"Personal" image scales						
Wise-foolish	.15	.07	-.04	.05	.05	-.61*
Calm-excitable	.22	-.25	.24	.26	.25	-.24
Sophisticated-naïve	-.08	.12	-.04	-.10	-.10	-.18
Intellectual-practical	.43	.17	.27	.00	.27	-.18
Conforming-nonconforming	-.17	-.09	.19	.14	-.04	.12
Gregarious-shy	.12	.04	.03	.17	-.01	-.08
Considerate-inconsiderate	.19	.18	.04	.16	.14	-.31
Patient-impatient	.41	.08	.10	.02	.14	-.28
"Political" image scales						
Influential-noninfluential	.11	-.41	.15	-.50	.16	-.103*
Cautious-risk taking	-.59*	.06	.17	-.21	.01	-.23
Aggressive-easy going	.32	-.13	.13	.02	-.14	.11
Decisive-indecisive	.17	-.21	.18	.10	.08	-.03
Rational-irrational	-.20	-.04	-.06	-.04	-.16	-.43
Liberal-conservative	.07	-.07	.13	-.17	.00	-.42
Powerful-powerless	.22	-.67*	.19	-.02	.52	-.72*
Ruthless-not ruthless	.12	.09	-.19	.13	-.01	.19
Individualistic-team man	.08	-.02	.27	.22	-.09	.20

Note. The first listed candidate was elected to office.

* $p < .05$.

^a Democratic party candidate.

^b Female candidate.

the candidate. Specifically, and as might be expected, after the election, the defeated candidates were, in general, seen as being less powerful and less influential than they were before their defeat. Conversely, the winning candidates showed increases on these same political image or political power scales. It is of further interest to note that once a candidate has been elected to office, there is a rather general tendency for him to be seen as becoming decreasingly cautious and increasingly risk-taking. Thus, having obtained for himself some degree of at least temporary political security and some degree of political influence and power, the winning candidates apparently projected to their constituents an image that implied that they could now take an increasingly unrestrained, aggressive, risk-taking approach to their conduct in office. Such a finding corroborates many of the journalistic observations of political writers who have discussed recent conventions and elections (13). The fact that the significant changes occurred mainly on the so-called "political" image scales would also bolster Sigel's contention that political surveys and research studies should employ adjective scales that are highly relevant to the political behavior and political image of the candidate rather than use adjectives that describe somewhat irrelevant aspects of the candidate's personality or physical appearance.

2. Changes on the Personal Image Scales

As can also be seen from the data in Table 1, apart from a decrease in the "wise-foolish" rating of Mrs. Peterson, there were no significant pre- to postelection changes on the "personal" image scales. Since these scales were more descriptive of rather stable personality traits and characteristics of the candidates, it seems quite reasonable that the perception of these attributes would undergo few, if any, dramatic changes as a function of the candidates' victory or defeat in the election. Again these results with respect to the personal image scales provide further evidence for the caveat that assessment of political profiles or images should make at least some distinction between descriptions of the personality characteristics of the candidates and descriptions of characteristics of the candidates that, due to their relevance to political behavior, are likely to be particularly relevant to the candidates' election to or defeat for public office.

3. Changes on the Semantic Differential Factors

Pre- to postelection changes on Osgood's three "meaning" factors of evaluation, potency, and activity are also shown in Table 1. Scales indicative of these factors were included in the questionnaire to give some comparison with

the previously mentioned studies which found significant changes on the evaluative dimension, but which also indicated that the potency and activity factors were quite ineffectual both in predicting actual voting behavior and in detecting postelection changes in the profiles of the candidates. Quite in contrast to these earlier findings, the data in Table 1 indicate that the significant changes occurred on the potency factor rather than on the good-bad scale of the evaluative factor. That is, the winning candidates were perceived as becoming increasingly potent or powerful, while ratings of the power of the losing candidates showed significant decreases after their defeat. Changes on the evaluation and on the activity factors were minimal for all of the six candidates, as can be seen from the data reported in Table 1.

4. *Factor Analyses of the Rating Scales*

In order to make a more empirical determination of the clustering of the rating scales, all 20 scales were intercorrelated and factored for the pre- and the postratings of each candidate. The first five principal components were extracted and rotated with use of the varimax criterion for each of these 12 correlation matrices. Examination of the factor loadings of the semantic differential scales in the 12 factor analyses suggested that for each candidate there was a rather unique factor structure. However, despite the uniqueness of these factor structures, it also appeared that in each of the 12 analyses two factors emerged that were common across all six candidates in both the pre- and postelection ratings.

As in most factor analyses of the semantic differential, one factor was identified as a rather general "evaluative" dimension characterized by such scales as "good-bad," "wise-foolish," and "considerate-inconsiderate." A second factor was tentatively identified as a "political assertiveness" factor and was defined by such scales as "influential-not influential," "decisive-indecisive," and "powerful-powerless." The six constituent scales of each of these two factors along with the average factor loading for each scale is shown in Table 2. It can be seen that, to some extent, the two factors of "evaluation" and "political assertiveness" parallel the original division of scales into "personal" image and "political" image scales. Consequently, the pre- to postelection changes on these two factors can be interpreted somewhat analogously to the previously discussed changes on the personal image and the political image dimension: the most striking and significant changes that occurred as a result of defeat or election to office were changes on those scales most relevant to the political image or political behavior of the candidate: i.e., changes on the "political assertiveness" factor. Winning candidates were seen as becoming increasingly

TABLE 2
AVERAGE FACTOR LOADINGS OF THE SCALES ON THE "EVALUATIVE" AND "POLITICAL
ASSERTIVENESS" FACTORS ACROSS RATINGS OF THE SIX CANDIDATES

Factor	Factor loading		Mean
	Pre-election	Postelection	
Evaluative factor			
Considerate-inconsiderate	.68	.69	.69
Good-bad	.68	.61	.65
Patient-impatient	.62	.51	.57
Wise-foolish	.60	.54	.57
Calm-excitable	.56	.58	.57
Cautious-risk taking	.50	.49	.50
Political assertiveness factor			
Active-passive	.66	.76	.71
Decisive-indecisive	.67	.54	.61
Strong-weak	.52	.61	.57
Aggressive-easy going	.58	.56	.57
Powerful-powerless	.45	.50	.48
Influential-not influential	.36	.52	.44

powerful, influential and aggressive politically, while ratings of losing candidates decreased on these same dimensions.

These results are evident from the analyses presented in Table 3. In order to compare changes that occurred on these specific factors of "evaluation" and "political assertiveness," the average factor score for each subject's ratings of the winning and the losing candidates on each of the two factors was computed and mean differences were tested from pre- to postelection ratings.³ These mean changes indicate that the ratings of the winning candidates increased significantly on both the evaluative and the political factors, while the ratings of the losing candidates showed significant decreases only on the political factor. Such results are quite in contrast to the previously mentioned studies that found significant increases in the evaluative ratings of *both* the

³ In order to assess the statistical significance of the difference between pre- and postelection ratings, a matched pairs or correlated means *t* test would be appropriate. Due to an administrative error and because all *Ss* were not present for both the pre- and posttesting sessions, it was not possible to match *Ss* pre- and postresponses to obtain individual difference scores. Therefore, all *t* tests were actually computed using the formula for independent groups, although it should be recognized that this is a very conservative estimate of the degree of statistical significance of the differences. In order to obtain a rough estimate of the degree of statistical significance of these differences had we been able to match pre- and postresponses, we computed *t* ratios using the formula for the matched-pairs *t* test. For this purpose, we assumed a very conservative estimate of the correlation between pre- and postresponses of .50, to estimate the variance of the difference scores. The *t* tests computed with this estimated standard error of the difference for matched pairs are also presented in Table 3.

defeated and the winning candidates (4, 8, 11). The present data indicate significant increases only on the evaluative or "attitude"⁴ ratings of the *winning* candidates, while ratings of the defeated candidates showed no significant pre- to postelection changes on the evaluative factor.

TABLE 3
MEAN PRE- TO POSTELECTION CHANGES FOR WINNING AND DEFEATED CANDIDATES ON
THE "EVALUATIVE" AND THE "POLITICAL ASSERTIVENESS" FACTORS

Candidate status	Pre- election	Post- election	<i>d</i>	<i>t</i>	<i>t</i> (esti- mated) ^a	<i>p</i> ^b
Winning candidates						
Evaluation	26.93	27.92	+ .99	1.55	2.11	< .05
Political assertiveness	28.53	29.44	+ .91	1.52	2.05	< .05
Losing candidates						
Evaluation	22.81	22.68	- .13	< 1	< 1	n.s.
Political assertiveness	23.57	22.19	- 1.38	1.88	2.54	< .02

^a See Footnote 3 in text

^b *p* values refer to the estimated *t* (see Footnote 3 in text).

D. DISCUSSION AND CONCLUSIONS

Previous studies have invoked a host of psychological and political concepts to explain their "nonobvious" increases in evaluation of the defeated candidate. For example, in Paul's (8) study the notion of a *fait accompli*, as well as a "cognitive consonance" and a "facilitative perception" principle, is presented as a tentative suggestion of why the favorability ratings of both the winning candidate (Eisenhower) and the losing candidate (Stevenson) showed substantial increases after the election.

The logic of Paul's argument is that the anti-Eisenhower subject, faced with the *fait accompli* of Eisenhower's election, strives to maintain an "equilibrium between his inclinations and the reality created by the election outcome." Hence, the subject who originally endorsed the loser could establish this equilibrium or consonance by increasing his favorability ratings of the winner. The logic of such an explanation seems quite apparent (if one can accept the basic "equilibrium" premise) in explaining increases in the favorability ratings made of Eisenhower by subjects who were initially in favor of Stevenson. However, this same logic, as well as the *fait accompli* effect, does not necessarily allow Paul, as he admits, to explain why actual decreases were

⁴ The evaluative factor of the semantic differential often has been equated to or defined as a measure of "attitude." For example, see Osgood *et al.* (7) and Anderson and Fishbein (1).

not obtained in ratings made of Stevenson by pro-Stevenson subjects. Paul avoids this rather troublesome problem by alluding, in a brief footnote, to the earlier study by Korchin (4) that invokes such cultural values as "sportsmanlike losing" and "sympathy for the underdog" to explain why the favorability of the losing candidate often increases after his defeat. As mentioned, Raven and Gallo (9) also found that among Democrats the defeated candidate (Nixon) was rated more favorably after his defeat. Their explanation is predicated on changes in reference groups into which Mr. Nixon could be placed before and after his defeat. That is, during the campaign Nixon was identified by the Democratic subjects as a member of a negative reference group—viz., the G.O.P. party—and would, therefore, be rated lower than their own party's candidate. According to Raven and Gallo, however, after his defeat Nixon increased in favorability among the Democrats because he was no longer seen as a representative of a negative group, but rather was seen as just another "fellow American."

Such *post hoc* explanations seem somewhat plausible in accounting for the results of these studies, but quite obviously are not readily applicable to data of the present study which indicated no significant changes in the evaluation of defeated candidates but highly significant changes in the political image of these same individuals. On the other hand, in the present study winning candidates increased significantly on both the evaluation factor *and* the political image factor, while losing candidates changed *only* on the political image factor.

One major difference between the present study and the previous election studies lies in the fact that all of the winning candidates were incumbents seeking re-election to their political office. The three defeated candidates, on the other hand, were all seeking election to the political offices of president, governor, and senator for the first time. These defeated candidates had to give up their own offices of somewhat lesser importance, in order to compete for the more important political office. Hence, when the incumbent candidate was re-elected to office, the defeated candidates were left without any official position within their party. It follows, then, that ratings made of the political power and assertiveness of these candidates should show significant decreases, since these individuals not only were defeated in their aspiration for a higher political office but they also lost the political influence and power they had held in their previous political positions, and were now left without any immediate access to a position of influence within the power structure of their party. Since the three winning candidates were all incumbents seeking re-election, it might be expected that after their victory ratings of them on the political factor would show few significant changes inasmuch as they did not

acquire any additional political power, but merely retained the office that they already held. The data in Table 3 indicate, however, that the ratings of the winning candidates, even though these individuals were incumbents, did increase significantly on the political factor. This may, in part, be due to the fact that scales such as "active-passive" and "aggressive-easy going" were constituent scales of this factor and that, as previously noted, the winning candidates, as a function of their victory, were seen as being given the license to advocate an increasingly aggressive and active role (e.g., in foreign policy) compared to the comparatively lenient or "soft" approach to such controversial topics that they had taken before their re-election. Hence, the factor itself is probably more aptly identified as a "political assertiveness" factor rather than a "political power" or "political influence" factor.

The present factor analyses of the semantic differential scales also suggest that some of the apparent contradictions and confusion in the political image literature could be clarified to some extent by examining separately those changes that occur on specific "evaluative" factors and changes that occur on factors more directly indicative of the candidates' political image or political profile. For example, from the adjective scales used in the Raven and Gallo study and from the "D" statistic that they used as their dependent criterion score, it becomes apparent that it is especially hazardous to try to make direct comparisons from study to study. The final 16 adjective scales used by Raven and Gallo were selected from a larger pool of items because of their effectiveness in discriminating between ratings made of a "worst conceivable president" and an "ideal president," while the final criterion score was a "D" score computed over all 16 scales between subjects' ratings of an "ideal president" and their ratings of the actual presidential candidates. It is important to note that these 16 scales contain some of the adjective pairs that constituted both the "evaluative" and the "political assertiveness" factors in our own factor analyses. Raven and Gallo included not only the typical scales of "good-bad" and "wise-foolish," but also such scales as "strong-weak" and "active-passive," which were constituent scales of our "political assertiveness" factor. In addition, their questionnaire contained a further set of relatively unique scales which were relevant to the candidates' stand on specific political issues: e.g., "pro-labor-anti-labor" and "pro civil rights-anti civil rights." Since their "D" statistic was computed over all of the 16 scales, the score itself obviated the possibility of examining separate changes or ratings on the various factors. Yet, our data strongly suggest that a unique factor structure occurs for ratings made of each political candidate, but the "D" statistic negates possible examination of ratings made on each of the unique factors that occur for each candi-

date. This is especially true when the "D" statistic is computed between the ratings made of the actual presidential candidate and the ratings made of an "ideal" president, since the factor structure of ratings of an "ideal" president may be quite different from those of any specific candidate for that office. Thus, the data in the present study suggest that part of the difficulty encountered in trying to make any direct comparisons among the various studies that have reported perceptions of, or changes in, the so-called "image" of political candidates may be due to the fact that the scales used in these previous questionnaires contained a composite of several political image factors. It appears that the factorial structure of ratings of each candidate may be unique for that candidate, and thus a single unidimensional score, such as a sum of the various scales or the common "D" statistic, does not adequately reflect the subjects' *multidimensional* perception of the various attributes of the political candidate. Although the generality of the present results is quite obviously limited by the selected subject population of Wayne State University students, the two factors of "evaluation" and "political assertiveness" may represent a minimum communality or base line in the perception of political candidates. Future studies should give more attention to a precise definition of these factors for all candidates, and, at the same time, should give special attention to the uniqueness of the factorial structure of the ratings of each political candidate. In this way, it might be possible to clarify further the nature of changes in perceptions and evaluations of political candidates, as well as the apparent controversy between the "balance" and "image" theories of political perceptions.

E. SUMMARY

During a study to determine the effects of defeat or election to office on the political image and attitudes toward national and state candidates, 52 psychology students were asked to rate candidates for president, governor, and senator both one week before and one week after the 1964 election. Ratings were made in 20 semantic differential scales, including: (a) political image scales, such as "influential-not influential," (b) personal image or personality scales such as "calm-excitable," and (c) the semantic differential "meaning" factors of evaluation, potency, and activity. Mean pre- to postelection differences showed that changes occurred mainly on scales that indicated gains or losses of political power and influence rather than on evaluative-type scales. For further clarification of these results, all scales were intercorrelated and factored for the pre- and postelection ratings of each candidate. The factor loadings in each of these analyses suggested that despite a rather unique

factor structure for each candidate, two common factors could be identified in both the pre- and postelection ratings of all six candidates. The factors were tentatively identified as "evaluation" and "political assertiveness." Pre- to postelection changes on these factors indicated that the ratings of the winning candidates increased significantly on *both* the evaluative and political assertiveness factors, while the ratings of the losing candidates showed significant changes (decreases) only on the political factor. In contrast to the results of previous political image studies, the present data indicated no significant changes in evaluation of the defeated candidate.

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THE INFLUENCE OF PATTERNS OF CONFORMITY AND
GENERAL REASONING ABILITY ON SUBJECTS'
RESPONSES TO AN INCONCLUSIVE MESSAGE:
A PRELIMINARY STUDY* ^{1, 2}

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A. INTRODUCTION

Behavior theorists (11, 26, 28), social philosophers and social psychologists (9, 10, 22), and psychoanalytic writers (12, 16) agree that a positive relationship exists between an individual's progressive incorporation into the adult world and his increased reliance upon important members, symbols, and institutions of that world for cues and sanctions as to how to respond. This relationship is generally spoken of as "socialization." The major *precondition* suggested leading to this increased dependency is that of helplessness of the infant and young child; the major motivation is the *feeling* of dependency upon others and a wish to please. As the child grows older, his biological well-being is progressively less threatened by deviance, but his psychological well-being becomes increasingly tied to conformity. The biological becomes psychological, the psychological becomes specifically cognitive; distress manifests itself as anxiety. Consensus holds that too much deviancy leads to alienation, a point originally stated by Marx, incorporated into psychoanalytic thinking, and later documented in small group experimentation (7, 20). The overall outcome of socialization with its avoidance of anxiety and possible alienation was aptly expressed by Fromm (17, p. 60). The individual eventually wants "to do what he is required to do by the social system under which he lives." Regardless of the label used (alienation, rejection, separation-anxiety, guilt, etc.), lack of other significant persons' support and esteem is held to be potentially a state of misery for child and man. There is agreement, also, that it is children's efforts to minimize such discomforts and threats

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that make them educable in the ways of society—but at a price; for as one becomes increasingly inoculated with society, he is supposed to become less able to stand apart from society and see it, and those parts of it that are his “self,” with objectivity. Freud (15, 16), Mead (22), and Fromm (17) have been the most forceful in pointing out the price, cognitively, that the individual incurs in the socialization process and in noting that the prices for the comforts of conformity are never listed; as one implicitly learns the ways of society, how to recognize and meet its requirements (the problem), the solutions (through conformity) invariably bring some losses or restrictions in one’s ability to perceive and to select alternative modes of experience.

There is a certain lawfulness implied here: the loss of cognitive “serendipity” entails a gain in emotional security in much the same way that Dollard and Miller (11) speak of a learned “stupidity” occurring in some psychological illnesses. There appear to be three propositions to the “law.” First, conformity is anxiety-reducing as long as it works, or the basis for conformity does not shift too fast or is not too great in its demands. Second, reliance upon the accepted modes and norms of culture, because it is anxiety-reducing, is also habit forming. Eventually, a high degree of social conformity becomes an “addiction,” and the person who chooses to deviate or to withdraw from the support of his culture faces symptoms of “cultural withdrawal” that can be painful: e.g., ostracism, marginality. Third, there takes place a progressive and lasting inability on the part of the chronic conformer to think “independently,” as well as to criticize the very cognitive supports offered to him by his society. Apparently, maintaining independence is not something one can do halfheartedly: if one is going to operate consistently independently one does it as a central part of his life style and personality (1, 2, 3, 6).

While most of the theoretical emphasis is upon the early years of life, a large segment of adult life can be viewed as a continuation of earlier socialization processes (13, 24, 27, 28). However, regardless of the ages of the persons involved or the setting in which the social influences occur, the extent of the influence exerted is dependent upon the recipient’s exposing himself (19); it is suggested that individuals differ in the degree to which they habitually expose themselves to messages that may be incongruent or threatening to their own beliefs or the beliefs or opinions accepted among their supporting social group (25). It is quite likely that such persons also differ in terms of what they can do with such messages that are either threatening or inconclusive.

The present experiment assumes that a person with a low tendency to conform, contrasted to one with a high tendency, but of equal reasoning ability, is better able to maintain his “objectivity” when listening to an impersonally

presented message of social relevance that contains no specific conclusions of its own. If so, it is further assumed that he is better able to draw valid conclusions from the message and that his opinion on the topic, if it changes, will change in line with the information imparted by the message.

Specifically, the experiment set out to determine which combination of two important subject variables—degree of conformity and general reasoning ability—resulted in more correct than incorrect conclusion-drawing and a more valid opinion concerning a “neutrally” presented but potentially anxiety-provoking message. The following experimental hypotheses were tested:

1. Conclusion-drawing: (*a*) Among Ss of comparable reasoning ability, subjects with low conformity scores will deduce significantly more correct conclusions than subjects with high conformity scores. (*b*) Among Ss of comparable conformity, subjects with high scores in general reasoning ability will deduce significantly more correct conclusions than subjects with low general reasoning scores.

2. Opinion-change: (*a*) Among Ss of comparable reasoning, subjects with low conformity scores will show a greater change in their opinions toward the data-supported opinion implied in the message than subjects with high conformity scores. (*b*) Among Ss of comparable conformity, subjects with high scores in general reasoning ability will show a greater change in their opinions toward the data-supported opinion implied in the message than subjects with low general reasoning ability.

B. METHOD

1. *Subjects*

Undergraduates served as subjects in a before-after design with a period of one week between the two experimental sessions.

2. *Procedure*

In the first session, Ss were given tests of social conformity and of general reasoning ability. The measure of conformity was a 37-item multiple-choice questionnaire (4, 5) forcing subjects to make a response, the direction being either toward social conformity or nonconformity. Following are two of the items: (*a*) Statistics show that what per cent of people who borrow money from friends repay it as soon as possible? 1) 25 per cent, 2) 38 per cent, 3) 51 per cent, 4) 64 per cent, and 5) 77 per cent. (*b*) The Harvard Research Bureau found what percentage of hit-and-run drivers were concerned only with the extent of damage to their cars? 1) 18 per cent, 2) 21 per cent, 3) 24 per cent, 4) 27 per cent, and 5) 30 per cent.

A subject's score was an indirect measure of his tendency toward one of two extremes. In the present⁶ experiment, Ss were characterized as "high" conformers if their scores were within the lowest quartile. The means for subgroups of "low" and "high" conformers were 6.24 and 24.28. Split-half reliability of the test was .87. The measure of general reasoning ability was the Ship Destination Test (8), which consists of verbal problems involving very little numerical ability. As the norms for the two sexes differ, male and female Ss were characterized as "high" general reasoners if their raw scores were equal to, or higher than, the 55th percentile for their respective sex; "low" general reasoners' raw scores were equal to, or below, the 20th percentile for their respective sex. The means for the "high" subgroups were 42 and 34 for male and female; for the "low" subgroups means were 24 and 16 for male and female respectively. The reported reliabilities for male and female college students are .92 and .93 respectively.

On the basis of the fulfillment of selection criteria by their combined scores of conformity and general reasoning, 43 of the 87 original subjects were placed into four subgroups for purposes of analysis. The specific percentiles (55th and 20th) were dictated by the scores of the subjects available. In order to obtain the desired combinations of reasoning and conformity scores it was necessary to draw from the upper half of the reasoning scores for the "high" general reasoning scores; there were sufficient numbers of subjects at the lower end of the distribution. These subgroups were made up of seven males and four females with the exception of one subgroup made up of seven males and three females, one subject not completing all of the opinion items.

Second session: Ss were given a 15-item questionnaire on various social topics, each question to be answered on a seven-point scale. Five of the 15 questions concerned biological warfare and one of the five questions dealt with Ss' concern about biological warfare. Immediately after filling out the questionnaire, Ss were presented with the unannounced message, recorded by a professional announcer. It was presented to Ss as an article which had recently appeared in print. The stated purpose of the message was to discuss whether or not biological warfare should be regarded as a "superweapon." Earlier use with comparable subjects had demonstrated that the message did not present or draw any specific conclusions about the vulnerability of this country to biological warfare or defenses against it, nor state a definite political position about the United States (14).

The focus of the message was upon the spreading of disease either against man or his resources. The introduction pointed out that, since no country had yet carried out a biological attack, the remarks in the message would be some-

what speculative: "However, we are in good position to speculate because in actuality there is little difference between a disease 'planted' in a country by an enemy or having the same disease 'naturally arise'" The talk then went on to compare different countries with the same diseases occurring at about the same time. The purpose of this comparison, as stated in the message, was to allow Ss to draw inferences concerning the United States' own vulnerability and ability to protect itself, for "By keeping in mind existing conditions in the United States, we should then be able to determine how well this country can defend against biological attacks." The comparison of Mexico and Australia, which followed, showed that in each instance of disease—hoof-and-mouth, blight, and cholera—Australia "seems to have a consistently better record of defending against diseases than does Mexico." Possible reasons for this difference were then speculated upon: e.g., better systems for spotting disease, for crop spraying, for water inspection and purification, and for recording "the number of cases of the various communicable diseases in a community." At the end the message stated that "In general, then, the country with the most advanced technology, with the most effective communication system, and with the most efficient distribution system is the one that is best able to resist biological attacks. Australia (while not as highly developed as the U.S. in these respects) greatly overshadows Mexico and should, therefore, be much more successful in resisting biological warfare directed against it."

It will be noticed that this message is somewhat more optimistic than the general opinion about biological warfare; this being so, one might characterize the message itself as being a *minority* viewpoint and therefore somewhat "nonconformist."

After the message was delivered, Ss were asked to write any conclusions that they had drawn from the message on a blank piece of paper attached to a postexperimental questionnaire. After the conclusions were written, Ss were asked to answer 20 multiple-choice questions, among which were the five before-message items on biological warfare, seven informational items on facts covered in the message, as well as items on the bias or neutrality of the message.

Subjects' conclusions were judged jointly by two trained psychologists. The basis for judging a conclusion correct was whether or not Ss had concluded that biological warfare (*a*) could be defended against, (*b*) was no more invincible than other forms of disease, (*c*) was not a superweapon (which was the original question up for discussion in the message), or that (*d*) the United States could defend itself from biological attacks. Other conclusions were not accepted as valid even though they might make sense in terms of some minor

points explicitly presented in the message: e.g., that Australia was more similar to the United States than Mexico, that poorly developed countries are more prone to some diseases than technologically well-developed ones, etc.

C. RESULTS

One finding that will set off clearly the data concerning the hypotheses is the fact that the four groups did not differ significantly before or after the message in their *concern* over biological warfare (see Table 1). Thus, the differences among the groups in terms of their conclusion-drawing and opinion change do not seem to be functions of differences in *Ss'* concern over biological warfare or changes therein.

TABLE 1
MEAN BEFORE AND AFTER CONCERN SCORES^a

Group	<i>n</i>	Before concern score	After concern score	Difference
LoC HiR	10	2.000	2.333	+.333
LoC LoR	11	1.363	1.545	+.182
HiC HiR	11	1.636	1.900	+.336
HiC LoR	11	1.818	1.700	-.118

^a All *t*-values between groups' Before scores and Before-After differences were between 1.213 and .009; one-tail *p*'s between .5 and .1.

1. *Hypothesis One: Conclusion Drawing*

This hypothesis was partly confirmed (see Table 2). The prediction that among *Ss* of comparable reasoning ability those with low conformity scores would draw significantly more valid conclusions than *Ss* with high conformity scores held true only for subjects with high reasoning scores. Low conformity-high reasoning *Ss* (LoC-HiR) were the only ones to draw more valid than invalid conclusions from the message and differed significantly from the other groups (all of which drew more incorrect conclusions than correct ones). These groups did not differ among themselves significantly in their conclusion-drawing, and produced slightly more conclusions per person than LoC-HiR *Ss* (2.35 to 2.09), indicating a slight difference in their reasoning efficiency, as well as in the validity of the conclusions drawn. The same performances hold for Hypothesis 1-b concerning conformity scores. Only among LoC-HiR *Ss* were more correct than incorrect conclusions drawn. Apparently, in order for *Ss* to draw more correct than incorrect conclusions from the message without explicit conclusions of its own, it is important that the *Ss* be both low in their conformity and fairly high in their general reasoning ability. Additional evidence for this is seen in the results of the LoC-LoR *S*. This group, low in

general reasoning ability as it is, still did slightly better in its conclusion drawing than either high conformity group, although not significantly so.

TABLE 2
POSTMESSAGE CONCLUSION-DRAWING PERFORMANCES

Group	<i>n</i>	No. of correct	No of incorrect	X ² value
LoC HiR	10	13	3	5.999**
LoC LoR	11	9	14	
HiC HiR	11	7	19	.066*
HiC LoR	11	7	15	
HiC HiR				7.457**
LoC HiR				
HiC LoR				.365*
LoC LoR				
LoC HiR				7.204**
HiC LoR				

Note *p*-values are one-tail; Yates-corrected.

* Not significant.

** Significant at $p < .01$.

2. Hypothesis Two: Opinion Change

This hypothesis was partly confirmed. Among both high and low reasoning *Ss* those with low conformity scores showed a significantly larger, valid opinion change than *Ss* with high conformity scores, as was predicted. There is additional support for the hypothesis: LoC-HiR *Ss*, who, the author feels, are potentially more able than others to be "objective" when confronted with such a message as used in the study, showed the largest valid opinion change of all four groups (+2.837). This performance is highlighted by the results of the HiC-LoR *Ss*, who, in the author's opinion, are the poorest equipped to handle the message. This group was the only group having an opinion change *away* from the position offered in the message (— .363).

Comparison of the HiC-LoR *Ss* and LoC-LoR *Ss* suggests that it is the conformity variable that is critical in this opinion change away from the message. (See Table 3.) In cases of high conformity, high reasoning ability seemed only to temper the direction of the opinion change to which high conformity and low reasoning ability lead. The opinion change data for the two groups of high conformity *Ss* were minimal (— .363 and +.600), while the opinion change data for the two groups of low conformity *Ss* were substantial (+2.837 and +1.732) and in the direction of the information presented in the message.

Tables 1, 2, 3, and 4 show an overall consistency among the four groups' performances in terms of conclusion drawing, opinion changes, and the amount

TABLE 3
POSTMESSAGE OPINION-CHANGE SCORES

Group	<i>n</i>	Mean opinion change	<i>t</i>
LoC HiR	10	+2.837	
LoC LoR	11	+1.732	1.225*
HiC HiR	11	+ .600	
HiC LoR	11	— .363	1.590*
HiC HiR			
LoC HiR			2.310**
HiC LoR			
LoC LoR			2.721***
LoC HiR			
HiC LoR			4.494***

* Not significant.

** Significant at $p < .025$, one-tail.

*** Significant at $p < .01$, one-tail

of information they recalled after the message. LoC-HiR Ss drew more correct than incorrect conclusions, had the largest message supported opinion change, and retained more of the information from the message immediately after presentation. The second-best group performance was by LoC-LoR Ss. In third and fourth places in the order of performance are HiC-HiR Ss and HiC-LoR Ss respectively.

TABLE 4
POSTMESSAGE INFORMATION SCORES

Group	<i>n</i>	Mean information scores	<i>t</i>
LoC HiR	10	5.583	
LoC LoR	11	4.750	2.392**
HiC HiR	11	4.500	
HiC LoR	11	4.500	.000*
HiC HiR			
LoC HiR			2.843***
HiC LoR			
LoC LoR			.300*
LoC HiR			
HiC LoR			2.673***

Note. *p*-values are two-tail

* Not significant.

** Significant at $p < .05$.

*** Significant at $p < .01$.

D. DISCUSSION

There is basically one set of data that requires discussion: the performance of the low conformity-high reasoning Ss. The author suggests some possible reasons for this performance. As was pointed out, theory and data strongly propose a close relationship between socialization processes and ego-cognitive

development at all ages. In the main, one can say that the pursuit of cognitive clarity and the reduction and maintenance of anxiety at a tolerable level are two basic stimulants to the development and the operation of the "two-cognitive" processes. It will be recalled that the topic presented—biological warfare—is a topic that for years one has heard about, off and on. Such a means of attack is usually represented as being unheralded from an unknown source; thus, one presumably is unable to take clear precautions against it. When presented in this manner, biological warfare has all the attributes of an ambiguous threat—therefore, potentially anxiety-arousing and the object of vague opinion.

In order to conclude that biological warfare is *not* a superweapon, one has to be able to expose himself to certain facts and incorporate them into one's cognitive organization concerning biological warfare. A person must be able (and even motivated) to expose himself to a message about a distasteful topic, and to entertain the possibilities of the message. The author feels that the LoC-HiR Ss were psychologically equipped to do this, and apparently did so.

Of particular relevance to the present experiment is McNemar's study of good and poor reasoners (21). Good reasoners were found to be more flexible than poor reasoners in their approach to problems and to entertain more ideas and information *during* their problem solving efforts than poor reasoners. The present study and McNemar's agree to the extent that good reasoners with low conformity scores were the only Ss to draw more correct than incorrect conclusions, as well as having the highest information retention.

An important methodological variable operating was the manner in which the critical information was presented. It was never summarized or concluded. What Ss were presented, to some extent, was a test of concept formation and it is this aspect that, the author feels, helps to account for the significantly better performances of the LoC-HiR Ss. McNemar found that her poor reasoners were more rigid and displayed more defensiveness and restraint during their problem solving efforts than good reasoners. There was indirect evidence in the present study of the same processes. Our poorest reasoners, HiC-LoR Ss, performed significantly more poorly than did their opposites. The author suggests that the difference in performance might have been the former Ss' greater conventionality *and* rigidity.

As for the very minimal opinion change among HiC Ss, the author suggests that the message of the present study would seem almost to force the subject with high conformity to hold with his earlier opinion about biological warfare for two reasons. First, his opinion is already formed and functioning; he does not need to do something that might be both difficult and distasteful to him. Second, if once involved with the message this subject did have trouble under-

standing the message (and his conclusion-drawing performance suggests that he did), then his before-message opinion is still available to him. We are suggesting that the before-message opinions of HiC Ss takes the place of reasoning in one of two possible ways: as a barrier to the new information or a haven from it. Either way is likely to preclude a substantial revision of opinion.

What might be the "payoff" of such a "closed" performance? Other studies (18, 23, 25) covering somewhat different cognitive areas have shown that such performances as seen in the present study have the facility of keeping the world organized, understandable, and less conflictful and anxiety-provoking. Such performances are partly defensive.

E. SUMMARY

Two hypotheses were tested concerning the influence of combinations of conformity and general reasoning ability in responses to a message on biological warfare. The message was neutral in its presentation without any conclusions of its own, offering only information that biological warfare is possibly not a "superweapon." A before-after design was used. Results confirm part of the two hypotheses. Subjects with a combination of low conformity-high reasoning ability drew more correct than incorrect conclusions, had the largest, fact-supported ("valid") opinion change, and retained the most information immediately after the message. Three other groups deduced more incorrect than correct conclusions, had more modest (and less fact supported) opinion change, and retained less information.

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COMPARISON OF TYPICAL PEER, SELF, AND
IDEAL PERCEPTS RELATED TO
COLLEGE ACHIEVEMENT*¹

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A. INTRODUCTION

In a previous article (7), the investigators pointed out that individuals are frequently much concerned about how they do or do not differ from their peers, and that psychologists themselves are often engaged in assessing such differences with respect to individual clients, as well as in their general efforts to establish norms of many kinds. It was further pointed out that while some studies are relevant to the problem (10, 11) and while a great volume of studies exists in Self-Ideal discrepancy, little has been done to explore the individual's perception of the differences between himself and his peers, or to relate such differences to meaningful variables. That article reported a study that demonstrated that Self, Typical Peer, and Ideal percepts differed significantly from one another in a fairly representative population of female college freshmen; that Typical Peer measures were not correlated with corresponding Self measures; and that discrepancy measures employing Self, and Typical Peer measures correlated significantly with a personality measure (Taylor Manifest Anxiety Scale).

The purpose of the present investigation was to test further the utility of the variable of Typical Peer perception by seeing whether it, in association with Self and Ideal measures, related to a broader behavioral, as opposed to a test, variable: level of scholastic achievement.

Specifically, the present study investigated whether a group of high and low achievers, matched for verbal and mathematical ability, differed on measures of (a) *magnitude* of discrepancy scores between Self, Ideal, and Typical Peer perceptions; (b) *direction* of discrepancy between Self, Ideal, and Typical Peer perceptions; and (c) descriptions of Self, Typical Peer, and Ideal, *per se*.

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¹ Preparation of the data analysis was facilitated by the assistance of Susan Osborne and Carolyn Cap, working under Undergraduate Participation Research Program grants of the United States Public Health Service, Grant MHT-7717, and National Science Foundation, Grant No. GE 4208.

All perceptions were measured on the variables of dominance (Dom) and love (Lov). Item (c) was investigated in order to avoid the possible error of attributing a significant finding to a trait *discrepancy* score when it can be attributed with greater parsimony to a *nondiscrepancy* score (4).

B. METHOD

1. Subjects

First semester grade point averages (GPA) were obtained for all freshmen women attending Douglass College (approximately 700), and from this population the two groups used in this study were chosen. The first group consisted of those students who made a GPA of 1.8 or lower (Honors GPA for the college); this group will be subsequently designated as "high achievers." The second group consisted of all those students who obtained a GPA of 2.4 or higher (2.4 was the college average GPA); this group will be subsequently designated "low achievers." The matching was done as follows: each high achiever was paired with a student from the low achievement group who had College Entrance Examination Board (CEEB) math and verbal scores within the same decile. In addition to the decile matching, every effort was made to maximize GPA differences and to minimize CEEB differences between the two groups. This selection process yielded 102 high-low matched pairs of students. Several investigations were being conducted simultaneously on these groups, and thus the subjects were asked to volunteer for six hours of testing to be done in two three-hour sessions. Of the 204 students solicited for the project, 103 responded positively. Ten subjects of this group were eliminated either because of incomplete testing or because of GPA alteration at the end of the year. The final sample consisted of 51 subjects in the high achiever group and 42 subjects in the low achiever group. The mean GPA of the high achievers was 1.59 ($SD = .19$); the mean of the low achievers was 2.87 ($SD = .37$). There was no overlap between groups.

Inasmuch as the loss of subjects following the initial matching might have distorted the CEEB score balance between the two groups, the CEEB math and verbal means and standard deviations were computed. The mean CEEB verbal score for high achievers was 609 ($SD = 75$), for low achievers 610 ($SD = 64$). The mean CEEB math score for high achievers was 604 ($SD = 58$), for low achievers 592 ($SD = 54$). There were no significant differences between the groups.

2. Procedures

The Interpersonal Check List (8) was administered and scored for Dom and Lov, following standard procedures (9). Students were asked to check

the ICL, first as descriptive of themselves, then as descriptive of their typical classmate (the operational definition of Typical Peer in this study), and finally as descriptive of their Ideal-Self. They proceeded from one description to the next at their own pace. The adjectives used on the checklist, and the scoring method, indicate that a person described as high in Dom tends toward managing others, bossiness, and liking responsibility, as opposed to being shy, timid, or passive. A person who is described as being high on Low tends toward agreeableness, fondness toward others, kindness, generosity, and sympathy, as opposed to criticalness, selfishness, unfriendliness, or strictness.

The Typical Peer scores were subtracted from the appropriate Self scores to obtain the Self-Typical Peer Dom and Self-Typical Peer Lov scores. The Ideal was similarly subtracted from the appropriate Self score to obtain Self-Ideal Dom and Lov discrepancy scores. The signs indicating the direction of discrepancy were taken into account for the directional discrepancy scores and ignored in the nondirectional discrepancy scores.

The previous study mentioned earlier had shown that correlations of the number of items checked in Self, Typical Peer, and Ideal descriptions with the measures used here averaged a nonsignificant $+.13$. Weighing discrepancy measures in an attempt to take Social Desirability items into account was similarly found to have little influence on these measures. For this reason, the investigators felt that the conclusions of the study would not be materially influenced by "acquiescent response set" (2, 3), "yeasaying" (1), or by "social desirability" (5, 6); and no effort was made to test again for these variables.

The .05 level of confidence on a two-tailed test was the criterion for significance used throughout. Probabilities of less than .10 were taken to indicate a notable trend.

C. RESULTS AND DISCUSSION

1. *Magnitude of Discrepancies Among Self, Typical Peer, and Ideal Percepts*

The authors are here concerned with measurements of differences between the various percepts without regard to the direction of the discrepancy. Thus, someone who saw herself as being five points *more* Dom than, say, the Typical Peer would be regarded in the analysis of Self-Typical Peer discrepancy magnitude as being identical to the girl who saw herself as being five points *less* dominant than the Typical Peer. Many studies that compare degree of correspondence between Self and Ideal contain analyses that similarly do not take into account direction on any particular dimension. It is quite conceivable that perceiving oneself as being quite different from one's ideal or from one's peers, regardless of whether it is in the direction of greater or lesser dominance,

would reflect an intrapsychic or interpersonal disharmony (or, taking the converse position, a motivating force) that would affect ability to function scholastically. If this were so, this type of measure would be more revealing than one that counted a discrepancy along a particular dimension, because the latter would put two individuals who differed by equally great magnitudes (but in different directions) at opposite poles from each other, thereby masking the fact that an equal magnitude of disharmony from the Typical Peer or Ideal existed.

The data (not presented here) showed no significant differences between the high achievers and the low achievers, with the use of magnitude of discrepancy among Self, Typical Peer, and Ideal percepts. There was one trend toward significance: the high achiever's perception of her Typical Peer tended to differ more from her Ideal on Dom than was true with the low achievers.

2. *Directional Discrepancies*

The authors are here concerned with establishing differences of this sort: if the low achievers tend to see themselves as, say, lower in Dom than their Typical Peer, is this more true or less true of the high achievers? The data reported in Table 1 show that no significant differences of this sort exist between the two groups. There are two trends, however, very near the .05 level. The first reveals that the low achievers do, as stated in the example above, tend to see themselves as less in Dom than their Typical Peer; and that this discrepancy is reversed in direction in the high achievers. The second trend is that the high achievers see the Typical Peer as relatively less dominant in comparison with their Ideal than do the low achievers. This, in reality, is not different from the trend as noted in the magnitude discrepancy section, because virtually all subjects had higher Ideal Dom scores than Self Dom scores; so differences in magnitude were practically all in the same direction. But note that the authors are able to make a more precise statement about the nature of the difference here than could be made when only magnitude was taken into consideration. This illustrates the wisdom of Cronbach's (4) cautions concerning the use of nondirectional discrepancy scores.

3. *Nondiscrepancy Measures*

Even more demonstrative of the wisdom of Cronbach's caution about discrepancy measures is the increased precision of understanding offered us when we look at the nondiscrepancy scores. These scores not only enable us to be clearer in our understanding of what the discrepancy measures indicate, but actually sharpen, statistically, the difference between the two groups. Whereas

TABLE 1
MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCES FOR ACHIEVERS AND
NONACHIEVERS ON DIRECTIONAL DISCREPANCY AND NONDISCREPANCY SCORES

Variable	Low achievers		High achievers		<i>M</i> low achievers minus <i>M</i> high achievers
	Mean	<i>SD</i>	Mean	<i>SD</i>	
Dom					
Self	18	6.16	1.25	6.79	-1.07
Typical Peer	2.75	6.16	-.01	5.69	2.76**
Self-Typical Peer	-2.57	9.81	+1.26	9.65	-3.83 ^a
Ideal	8.84	2.75	8.38	3.46	.46
Self-Ideal	-8.66	6.28	-7.13	7.52	-1.53
Typical Peer-Ideal	-6.09	6.18	-8.39	6.84	2.30*
Lov					
Self	2.16	6.74	-.49	7.37	2.65*
Typical Peer	-2.11	7.20	-2.46	6.62	.35
Self-Typical Peer	4.27	10.34	1.97	10.34	2.30
Ideal	4.87	5.43	4.02	4.70	.85
Self-Ideal	-2.69	6.97	-4.51	6.75	1.82
Typical Peer-Ideal	-6.98	9.07	-6.48	8.70	.50

* $p < .10$

** $p < .05$.

with discrepancy measures only trends existed, the authors here find a clearly significant difference (see Table 1, second row). The high achievers see their Typical Peer as less dominant than do the low achievers. (Since the mean of Self-Percept of the high achievers was somewhat higher on Dom than that of the low achievers, one would expect that the discrepancy between Typical Peer and Self would have yielded the more powerful discrimination between the groups. However, it seems that actually more power was lost than gained in using the discrepancy measure because of the increased standard deviation.)

Since Typical Peer dominance entered into all the trends found when using discrepancy scores, it is not too surprising that it provided the best discrimination between groups of the nondiscrepancy measures, and that the other measures involved there did not differentiate the groups when used individually. What is unexpected, however, is that a new trend toward statistical significance is apparent here that was evidently masked in the discrepancy measures. There is a trend for the Self-Percept of the high achievers to be lower in Lov than the Self-Percept of the low achievers.

The most parsimonious way of integrating the data, it seems to the investigators, is to discard the discrepancy measure results and simply conclude that the essential differences are that in comparison with low achievers, high achievers view their Typical Peer as low in Dom and tend to view the Self as low in Lov.

How might these differences be explained? A percept of significantly greater Self Dom for the high achievers would have been easier to interpret, as greater dominance might directly facilitate good grades via more class participation. But differences in Self Dom did not reach even the trend level, whereas the difference in Typical Peer Dom reached statistical significance. And why the trend toward less Lov in the Self-Percept in this high achiever group? To the investigators, the interpersonal variable that seems to link these findings to each other and to level of academic achievement is that of competitiveness. The person who sees his peers as relatively low in dominance and himself as relatively lacking in love is a person who, on the basis of (a) the strength of opposition he expects from others and (b) the preservation of his existing self-concept, can afford to be the most competitive person.

The major question posed for this investigation—whether the variable of Typical Peer Percept would continue to prove itself a useful measure—can be answered affirmatively, since it was the one variable that proved to differentiate significantly the two groups. Two other lines of investigation also should receive impetus from these results: the relationship between the variables of Self Lov, and Typical Peer Dom percepts and competitiveness, and the relationship between interpersonal competitiveness and academic achievement.

D. SUMMARY

The purpose of this study was to continue exploration of the viability of Typical Peer Percept as a research variable. Typical Peer, Self, and Ideal-Self percepts of Dom and Lov were used singly and in discrepancy measures to test for differences between 51 high and 42 low achieving female college freshmen matched on math and verbal CEEB. The three discrepancy variables that showed trends ($p < .10$) all involved Typical Peer Dom. There was also one trend among nondiscrepancy measures: high achiever's Self was lower in Lov. The sole variable showing a fully significant difference between groups was also a nondiscrepancy measure: high achiever's Typical Peer was lower in Dom. These two differences were then hypothesized to be related to competitiveness. It was concluded that Typical Peer Percept is a variable worthy of more extensive use in research.

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A STUDY OF EMPIRICALLY DERIVED VALUES^{*}

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A. INTRODUCTION

Most studies of human values are implemented by way of the Allport-Vernon-Lindzey *A Study of Values* (2) and the Morris *Ways to Live* document (7). Indeed in Allport's volume, *Pattern and Growth in Personality* (1), the only two procedures for studying values that are discussed at length are his own instrument and that of Morris.

A Study of Values is based on the typology of values conceptualized by the philosopher, E. Spranger, and is, therefore, an effort to define psychological measurement along his conceptualized scheme. *A Study of Values*, therefore, does not measure empirically derived values, but rather measures that conceptually defined system of values. Morris' instrument, on the other hand, was developed by his formulating lengthy paragraphs, each describing a way to live, composed principally from leading world ideologies. The final form of the document may be said to be empirically derived due to the fact that Morris, over the period of years, while developing his document asked respondents to nominate ideologies not contained in his original instrument. As a result, its final form contains 13 ways to live, a number well beyond those originally formulated. Morris' document may, therefore, lay a claim to some empirical derivation. It is worth noting, however, that the separate ideologies (*Ways to Live*) are exceedingly complex and abstract and appear to be difficult to relate to behavior because of this abstraction; some attention has been directed toward their simplification (4, 5, 6).

The present study was undertaken to identify a set of empirically derived values stated in a less abstract form on the hypothesis that such a set would yield psychologically meaningful constructions of value systems. The study also sought relationships between one's value system and certain other variables that appear to be related conceptually to values: e.g., sex, age, marital status, political affiliation, church membership, etc. Significant correlations between values and these other variables would lend construct validity to the obtained value systems.

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B. METHOD

Seventy-five introductory psychology student volunteers at the Pennsylvania State University were used to generate an initial set of value statements. They were divided at random into three equal groups, each provided with a different set for generating value statements. One group was asked to respond to the set "sources of meaning in life"; another responded to the set "goals in life"; and the third responded to "sources of pleasure in life." Each person was instructed to generate 10 items for his set that he felt were true of the general population and 10 items that were true of himself, specifically. This procedure yielded 1500 statements, which preliminary investigation in the form of review by other students reduced to 75, nonoverlapping, clearly stated values, each of which was cast into infinitive form, such as "to be loved," "to direct others," "to understand others," "to be useful," etc.

The final set of 75 value statements was administered as a 13-pile Q-sort task to 112 persons of varying background in the university community. (Data for seven persons had to be discarded for recording errors in their Q-sort task.) In the sort, the first pile contained the statements "of lowest value to you," while the 13th pile contained the statements "of highest value to you." Piles 1 through 13 contained 1, 2, 4, 5, 9, 10, 11, 10, 9, 6, 4, 2, 1 statements, respectively.

The selection of subjects was not random, and justifiably so, since the present study was not directed toward developing inferences from a sample to a population, but rather directed toward generating a variety of possible value orientations.

Approximately one-half of the 105 subjects were undergraduates, the others being graduate students, faculty members, and persons in the surrounding community. The age range for subjects was from 16 to 54; there were about equal numbers of each sex, and demographic data indicated that they represented a large enough variety to allow for the possibility of discovering different and distinct value orientations. For example, there were relatively large frequencies in such classes as *Protestant, Catholic, Jewish, nonreligious, Republican, Democrat, Liberal, Conservative, firstborns, later borns, students, nonstudents*, etc.

The Q-sorts were used to generate a matrix of correlations among persons, which was then subjected to a principal components factor analysis on an electronic computer utilizing a varimax solution. Correlations were computed between loadings on the factors that emerged and the Q-sort placements of the value statements in order to identify which statements were related to each

of the factors. In addition, correlations (Pearson-product moment or biserials where appropriate) were calculated between factor scores and the variables included in a questionnaire. The questionnaire asked the *S* to provide information about a variety of personal, social, and demographic variables.

C. RESULTS AND DISCUSSION

Eight factors were obtained which accounted for 64 per cent of the variance.¹ All of them were interpretable.

Factor I, accounting for 27 per cent of the common variance, is identified by the value statements given in Table 1. The table identifies only those value statements for which statistical significance is beyond the .01 level. Positive correlations (represented by + signs) reflect assigning high value to statements by individuals loading positively on that factor; negative correlations (represented by — signs) reflect the assignment of low value to the statements. Examination of Table 1 shows that individuals with high loadings in the factor lead high value to reciprocal love, sensitivity to others, and warm emotional responsiveness; while they tend to give less value to managing, directing, excelling, striving, etc. Forty-three persons load positively beyond .40 on the factor. For purposes of communication, the authors have identified members of this class as *Affiliative-Romantics*.

When the correlations between loadings on Factor I and demographic variables are examined (see Table 2), the authors note that women are more likely than men to have high loadings on this factor ($r = .37$), an observation that might have been anticipated given a definition of the factor. Note also that there is a significant relationship with ordinal position in the family (.16). Firstborns are less likely to load on this factor, again an observation that might have been anticipated from Alfred Adler's constructions about birth order (3, p. 379). Let us also note that our findings are at odds with the inferences of Schachter (8), who describes firstborns as more likely to be affiliative than later borns.

For the purpose of clarity, the authors summarize findings for the first factor in the following manner, which they then use in reporting the remaining seven:

Factor I: "Affiliative-Romantics"

Common variance accounted for: 27 per cent

N loading +: 43

Characterization: high value to reciprocal love, sensitivity to others, warm

¹ The matrix of correlations, the unrotated matrix, the rotated matrix and tables of item-factor loading correlations are available from the authors on request.

TABLE 1
FACTOR-VALUE STATEMENT RELATIONSHIPS*

	Factor							
	I	II	III	IV	V	VI	VII	VIII
1. to be respected				-				
2. to be wealthy	-	+	-					
3. to be politically wise	-		+				-	
4. to have formal higher education								
5. to be financially secure		+	-					-
6. to like yourself	+	+	+		+	+		
7. to be on affectionate terms with family				+	+	+		-
8. to have sexual prowess		+	-					+
9. to love all mankind		-	+					
10. to know that you are the best at something	-	+		-				+
11. to excel generally	-	+	-	-	-	-		
12. to solve difficult problems	-			-	-	-		
13. to succeed in your work				-				
14. to be strong physically			-					
15. to be physically attractive		+	-				-	+
16. to be well-known	-	+	-	-				
17. to have close friendships					-			
18. to be remembered after death	-					-		
19. to be married	+			+		-		-
20. to have sexual relations		+	-	+			-	
21. to have children	+			+				-
22. to make others happy	+							+
23. to have self-control							+	
24. to be artistically creative		+	+			-		
25. to be religious		-						
26. to seek truth			+					
27. to be accepted by others			-					+
28. to accept others	+		+			+		
29. to relax and feel content						+		+
30. to feel you own what you want		+						
31. to be an individual			+		+			
32. to confide in others								
33. to have help when you want it								
34. to be unafraid					+	+		+
35. to go to heaven		-	-					
36. to have recreations							+	
37. to work hard				-				
38. to prevail in intellectual give and take		+	+					
39. to be alone			+		+			
40. to own things	-	+	-			+		
41. to direct others	-	+		-				
42. to be useful	+		+				+	
43. to be in love	+			+				
44. to be active							+	
45. to pray		-	-					
46. to appreciate nature			+					
47. to remember your past				+				
48. to have status	-	+	-	-				

TABLE 1 (continued)

		Factor							
		I	II	III	IV	V	VI	VII	VIII
49	to be loyal to friends					—			
50.	to be loyal to your country		—						
51.	to stand by your beliefs		—	+					
52.	to be optimistic							+	
53.	to share what you have			+		—			
54.	to be a part of social groups								
55.	to affiliate with humanitarian ef- forts			+		—			
56.	to be involved in politics	—		+				—	
57.	to have a tradition	—							
58.	to make decisions				—				
59.	to be in charge	—	+		—				—
60	to respect your parents		—	—			+		
61.	to provide for relatives			+				—	
62.	to be unselfish		—	+					
63	to teach			+					—
64.	to live up to others' expectations for you								
65.	to be your own boss	—	+	—	—	+			
66.	to be part of a productive organi- zation				—				
67.	to be loved	+		—	+				
68.	to not be in physical pain		+				+		
69.	to be free of wrongdoing		—						
70.	to appreciate beauty			+					
71.	to have high moral and ethical standards		—						
72.	to be sober and clearheaded				—	+			
73.	to be sensitive to others' feelings	+		+	+				+
74.	to be able to respond emotionally	+	+	+	+				
75.	to contribute to society			+					

* + indicates positive correlation significant beyond the .01 level. — indicates negative correlation significant beyond the .01 level.

emotional responsiveness; less value to managing, directing, excelling, striving.

Correlations: tendency to be female; tendency to be firstborn.

Factor II: "Status-Security Valuers"

Common variance accounted for: 25 per cent

N loading +: 39

Characterization: high value to status, security, wealth, achievement, sexual prowess; less value to moral, ethical, and religious items.

Correlations: tendency to be not religious and not participate in religious service; more likely to be Jewish, nonaffiliated, or other than Protestant or Catholic.

Factor III: "Intellectual Humanist"

TABLE 2
CORRELATIONS BETWEEN FACTOR LOADINGS AND DEMOGRAPHIC DATA ($N = 105$)

Data	Factors							
	I	II	III	IV	V	VI	VII	VIII
Sex	.37**	-.04	.40**	.36**	.16	.12	.07	.02
Protestant ¹	.12	-.31**	-.08	.01	.03	.02	.11	-.16
Catholic ¹	-.13	-.20*	-.28	-.19*	.07	-.07	-.02	.18*
Jewish ¹	.04	.23*	.00	-.01	-.15	.12	.00	-.15
Not affiliated ¹	-.06	.37**	.39**	.18*	.04	-.08	-.13	.17*
Student-Other	.13	-.06	.31**	.11	-.09	.12	-.05	-.12
Single-Married	.08	.04	.23**	.29**	.01	-.06	-.11	-.21*
Religious- Nonreligious ¹	.09	-.51**	-.01	-.02	.05	-.02	.04	-.12
Republican- Democrat	.09	.14	.05	.07	-.09	.02	.11	-.10
Liberal- Conservative	-.14	-.11	-.02	-.10	.11	-.04	-.17*	-.11
Strength of Political Feeling ¹	-.05	.08	.31**	-.01	-.23*	-.15	-.35**	-.04
Membership in Activist Groups ¹	-.03	.09	.31**	-.13	-.05	-.08	-.24**	.18*
Membership or Sympathy with Activist Groups ¹	-.07	.14	.41**	-.00	-.14	-.13	-.20	.12
Birth Order	.16	-.05	.03	.01	.03	.06	-.04	-.20**
Age	.10	.02	.33**	.01	-.04	.25**	-.04	-.16*
Number Religious Services per year	-.05	-.60**	-.30**	-.09	.05	-.02	-.04	-.03
Parental Income	-.10	.14	-.01	-.05	-.04	.12	-.13	-.30**

* $p < .05$.

** $p < .01$.

¹ The variable here is Membership/Non-membership in the category Protestant, Catholic, Jewish, Not affiliated or Other, Defining Oneself as Religious, Claiming Strong Political Feelings, Having Membership in One or More Activist Groups, Having Membership or Sympathy in One or More Activist Groups.

Common variance accounted for: 13 per cent

N loading —*: 18

Characterization: high value to truth seeking, affiliation with humanitarian efforts, contribution to society, solidarity with mankind; less value to success, self-indulgence; judgment by others.

Correlations: tendency to have strong political feelings, be members of activist groups; tendency to be married, to be a nonstudent, to be not Catholic and not a member of a religious group.

*While the loadings were negative reflecting rejection of this orientation in the sample, the authors have characterized this cluster of individuals in terms of the hypothetical type who would load positively.

Factor IV: "Family Valuers"

Common variance accounted for: 9 per cent

N loading +: 12

Characterization: high value for love, marriage, and children; less value to management, success, and status.

Correlations: more likely to be women and married; likely to be non-affiliated religiously or members of small religious groups; not likely to be Catholic.

Factor V: "Rugged Individualist"

Common variance accounted for: 5 per cent

N loading +: 5

Characterization: high value to solitude, individuality, independence; less value to humanitarian efforts, interest in other persons, loyalty to others, and sharing.

Correlations: tends not to have strong political feelings.

Factor VI: "Undemanding-Passive"

Common variance accounted for: 7 per cent

N loading +: 7

Characterization: high value to general stability, relaxation; less value to striving.

Correlations: tendency to be older.

Factor VII: "Boy Scout"

Common variance accounted for: 5 per cent

N loading +: 2

Characterization: high value to being useful, optimistic, and active; less value to political wisdom, sex, and physical attractiveness.

Correlations: tend to be liberal; not to have strong political feelings, not

to have membership or sympathy with activist groups.

Factor VIII: "Don Juan"

Common variance accounted for: 9 per cent

N loading +: 12

Characterization: high value to physical attractiveness, sensuality, and sex; low value to family items, such as having children, being married, and being on affectionate terms with one's family.

Correlations: tend to be Catholic, single, firstborn, young, have low income parents, and not to be members of activist groups.

The examination of the correlations between factor loadings and the demographic data leads the authors to claim some construct validity for the factors identified by the procedure of the present study. The authors have noted that the relationship between Factor I and sex might have been anticipated; Adler's construction about birth order is also congruent with the results for this factor. Additionally, it might have been anticipated that the Status-Security Valuers would have described themselves as not religious or as not participating in religious services. The relationship between membership in the Intellectual-Humanist group and having strong political feelings and having membership in activist groups might also have been forecast. Moreover, the relationships between loadings on the Family Valuer factor and sex, between the Rugged Individualist factor and lack of strong political feelings, between the Don Juan factor and tendency to be single, young, etc. would all have been predictable.

A final point is worthy of note. The procedure of empirically deriving the value constructions within populations has led to a construction of values quite different from those of Allport-Vernon-Lindzey and Charles Morris. The former provides for measurement of the extent to which individuals subscribe to a number of pure value directions: *Theoretical, Economic, Esthetic, Social, Political, and Religious*. Morris' analysis yields five factors identified as (a) social restraint and self-control, (b) enjoyment and progress in action, (c) withdrawal and self-sufficiency, (d) receptivity and sympathetic concern, and (e) self-indulgence. Our empirical procedure with an essentially college population, on the other hand, has led to labelling eight factors: *Affiliative-Romantic, Status-Security Valuer, Intellectual Humanist, Family Valuer, the Rugged Individualist Factor, the Undemanding Passive Group, the Boy Scout, and the Don Juan*.

It appears to the authors that their procedure provides a meaningful approach to the investigation of values. The general approach of the present study makes it possible to study value constructions as they are existential in

groups. For example, different constructions of values might be expected to emerge when groups different from college sophomore populations are studied - e.g., adolescents, the disadvantaged, inmates of prisons, the aged, teachers, counselors, etc. Both the Allport-Vernon-Lindzey instrument and the Morris *Ways to Live* document, on the other hand, approach quite different populations with a standard and perhaps in some ways inappropriate instrument.

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ATTITUDINAL CHANGE TOWARD NEGROES AND SCHOOL DESEGREGATION AMONG PARTICIPANTS IN A SUMMER TRAINING INSTITUTE*¹

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A. INTRODUCTION

The Civil Rights Act of 1964 and the Elementary and Secondary Education Act of 1965 have provided necessary legal and moral assistance to supporters of equal educational opportunities and have promoted, as well, the acceleration of desegregation of public schools in the deep South. At the same time, these Congressional laws and related court decisions are viewed as roadblocks by those who insist on maintaining segregated public schools. Nevertheless, these acts of Congress may prove to be more productive of racial desegregation in the South than any other legislative action since the 1954 Supreme Court decision.

It would be extremely unrealistic to contend that, either before or after 1954, any large portion of the Southern white population had been in favor of public school desegregation. Numerous statements and actions bear witness to the fact that attitudes toward desegregation in the South are complex, involving varying degrees of opposition to the principle of school desegregation. Obviously, behavioral and attitudinal change regarding the question of desegregation in public schools will be necessary if the law of the land is to be implemented without irreparable damage to Southern educational programs.

Careful planning for the increased pace of desegregation of schools in the South is paramount. Various programs have been designed to speed school desegregation. Participants in the processes of school desegregation must include not only the teaching and administrative staffs but also students, their parents, and the community at large. Teachers and administrators, however, may well have to assume the major role as agents of educational change, as well as the

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more difficult role as agents of social change. As such, they may require knowledge of the ways in which psychological attitudes are formed in order to reduce extreme tension and lessen related problems.

Not only will there be demands for outward acceptance of change in administrative school patterns and a reexamination of attitudes toward the concept of equal educational opportunities, but also for a change of attitudes and behavior regarding the rightful place of Negroes in formerly all-white public schools.

B. PURPOSE OF THE STUDY

The purpose of this study was to measure changes in attitudinal patterns of participants in a graduate institute concerned both with problems occasioned by school desegregation and with the related problems of the culturally disadvantaged student. The primary goals of the investigation were to ascertain (*a*) whether an 11-week graduate training institute would have an effect on changing attitudes of participants toward Negroes and school desegregation and (*b*) the extent to which there would be a reduction in participants' authoritarian and ethnocentric tendencies.

The authors assumed that certain attitude syndromes among institute participants would best contribute to acceptable desegregation processes in the public schools and that an objective of such institutes, supported by the federal government, would be to focus attention on the desirability of positive change in attitudes toward Negroes, the culturally disadvantaged, and school desegregation. It is imperative that new and positive approaches to current desegregation problems be forthcoming if schools are to provide support in reaching the goal of equal educational opportunities for the nation's youth. Thus, the primary focus of this article is a report on the degree to which the institute experience was successful in achieving a positive modification of participants' attitudes toward Negroes and school desegregation and the extent to which authoritarian and ethnocentric tendencies were reduced.

Previously reported research concerning attitudes of Southern whites toward Negroes and school desegregation indicates that Southern white adults are typically more anti-Negro in their attitudes and actions than are white Northern adults (3, 9, 16, 19). At the same time, evidence in social-psychological research indicates that there does not exist a solid South—either in terms of its attitudes toward the Negro or its resistance to desegregation (18).

Attitudinal change involving salient attitude objects is difficult to effect. Katz stated that some noticeable degree of dissatisfaction with one's self-concept or its associated values was essential in any opening wedge for funda-

mental attitude change (10). At the same time, attitudes are often expressed in overt actions, and such actions can help determine attitudes. Thus, behavior change may often precede attitude change (11). Various studies have reported that unfavorable attitudes toward the Negro were not changed by a factual, informative appeal. Self-insight material had a greater effect in bringing about more positive attitudes toward Negroes (12).

Recent studies support the assumption that weak attitudes are more susceptible to change than strong attitudes, regardless of the approach: i.e., the more extreme the attitude, the smaller the change as a result of attempts at inducing change (8). Carlson (6) found that a change in specific goals of subjects brought about changes in attitudes, and Bogardus (5) reported that a six-week workshop was instrumental in inducing significant changes among experimental subjects in their attitudes toward greater ethnic understanding.

The importance of salient reference groups and the degree of conformity have substantial effect on the degree of attitude stability or change (13, 14, 17, 20). In relating conformity to Southern attitudes toward Negroes, Black and Atkins (4) pointed out that "what is overlooked is that widespread anti-Negro reactions are not necessarily individual personality problems, but rather may be institutionalized and culturally expected social patterns." It appears that, in some cases of attitudinal conflict over ethnic relations within a group, the position of the larger community will assert decisive influence over the outcome.

C. METHOD

1. *Sample*

The sample consisted of two intact groups. The experimental group was composed of 46 subjects who were participants in a federally sponsored institute at Auburn University during the summer quarter of 1965. (The responses of two Negro participants were not included in this study.) Twenty-nine subjects enrolled in a graduate seminar in education at Auburn University during the 1965 summer quarter comprised the control group. Both groups were found to be from the same general population. Demographic variables established general comparability of the groups (Table 1). In only two demographic categories were significant group differences found (at the .01 level): those of school racial status and educational preparation. When one examines the extent to which these schools were integrated, the reported difference becomes minor. In most of the schools listed by members of the experimental group as being partially integrated, an extremely small percentage of Negro students was enrolled. The educational level of the experimental group was higher than

that of the control group. However, this difference was not extremely important, since all subjects had received the bachelor's degree, a significant division in educational levels of the general population. Comparisons of mean test scores on the pretest showed no significant difference between the two groups (Table 2).

TABLE 1
NUMBER AND PER CENT DISTRIBUTION OF SUBJECTS IN THE EXPERIMENTAL AND CONTROL GROUPS ON SELECTED DEMOGRAPHIC CATEGORIES SUBSTANTIATING COMPARABILITY

Criteria	Experimental (N = 46)		Control (N = 29)	
	Number	Per Cent	Number	Per Cent
Sex				
Male	16	35	10	35
Female	30	65	19	65
Age				
Under 25	5	11	7	24
25-35	12	26	8	28
36-45	14	30	9	31
Over 46	15	33	5	17
City population				
Under 2500	14	30	8	28
2500-5000	10	22	4	14
5000-10,000	6	13	1	3
10,000-25,000	5	11	4	14
Over 25,000	11	24	12	41
Negro population				
0-10 per cent	8	17	2	7
11-25 per cent	13	28	7	24
26-50 per cent	16	35	16	55
Over 50 per cent	9	20	4	14
Lived outside the Southeast				
Yes	21	46	13	45
No	25	54	16	55
Years outside the Southeast				
None	25	54	16	55
1-5 years	14	30	8	28
6-10 years	2	5	0	0
11 or more years	5	11	5	17
Income bracket				
Under \$5000	4	9	6	21
\$5000-\$7000	12	26	6	21
\$7000-\$10,000	20	43	12	41
Over \$10,000	10	22	5	17
Socioeconomic class				
Lower middle	9	20	11	38
Upper middle	36	78	18	62
Lower upper	1	2	0	0

TABLE 1 (*continued*)

Criteria	Experimental (<i>N</i> = 46)		Control (<i>N</i> = 29)	
	Number	Per Cent	Number	Per Cent
School position				
Teacher	37	80	26	90
Counselor	2	5	1	3
Principal	7	15	2	7
School racial status				
Segregated	23	50	24	83
Partially integrated	20	43	4	14
Integrated	3	7	1	3
Educational level				
Bachelor's degree	12	26	10	35
Bachelor's plus	10	22	14	48
Master's degree	19	41	5	17
Master's plus	5	11	0	0

TABLE 2
MEANS, STANDARD DEVIATIONS, AND TESTS OF SIGNIFICANCE BETWEEN EXPERIMENTAL AND CONTROL GROUPS ON PRETEST SCORES OF ATTITUDINAL INSTRUMENTS

Variable	Experimental (<i>N</i> = 46)		Control (<i>N</i> = 29)		
	Mean	SD	Mean	SD	
F score	97.74	22.69	102.03	27.90	.70 NS
E score	60.65	19.41	63.64	23.08	.39 NS
D score	89.65	29.52	98.00	40.15	.97 NS
Subtest J of E	14.57	5.91	15.00	5.94	.31 NS
Subtest N of E	18.00	8.40	19.41	11.11	.58 NS
Subtest O of E	28.11	8.72	28.24	9.18	.06 NS

2. Instruments

The California Ethnocentric (E scale) and Authoritarian (F scale) scales (1), and the Allport-Vernon-Lindzey *Study of Values* (2) were utilized as the basic instruments of measurement. A 30-item Desegregation scale (D scale), constructed by the senior author, was utilized to ascertain specific attitudes toward Negroes and public school desegregation. Following are examples of D scale items: (*a*) Desegregation decisions of federal courts have done irreparable damage to Southern schools. (*b*) Attempts at human understanding of and interaction with Negroes is unnecessary and even dangerous. (*c*) Interracial contacts in the public schools will eventually bring about an acceptable modification of former negative attitudes toward minority groups. (*d*) School boards should continue to maintain segregated teaching staffs.

Content validity of the D scale was arrived at through utilization of ratings of seven university judges. Items were edited to meet criteria necessary in attitude scales: i.e., avoiding the use of factual or ambiguous statements. Additional construct validity was arrived at by the known-group method. The final D scale was administered to two small groups of advanced graduate students with "known" attitudes toward desegregation and Negroes. Direction of differences was predicted, and the scale was found to differentiate significantly between the two groups.

The E scale consists of three subscales and measures attitudes toward (a) Jews (subtest J), (b) Negroes (subtest N), and (c) minority groups other than Jews and Negroes and toward the United States as an ingroup as contrasted with other nations as outgroups (subtest O).

The F scale measures implicit authoritarian and antidemocratic personality trends. Positive and highly significant correlations have been reported between the F and E scales (7), indicating an ethnocentric-authoritarian personality syndrome.

The *Study of Values* was designed to measure the relative prominence of six basic interests or motives (values) in personality; the theoretical, economic, aesthetic, social, political, and religious.

Necessary demographic data were obtained by means of a personal data questionnaire.

3. Procedure

The D, E, and F scales and the *Study of Values*, complete with written instructions, were distributed by the investigators to the subjects of the two groups at the first two testings—at the outset of the institute (pretest) and at its conclusion (Posttest I). A one-page data questionnaire was also completed at the initial testing. Subjects were informed of the research value of assessing attitudes at three different time intervals, and no additional explanation seemed warranted.

The measuring instruments were sent by mail to the two groups in order to obtain responses at the third testing (Posttest II), three months after the conclusion of the summer institute. Ninety-three per cent of the control group and 98 per cent of the experimental group completed and returned the instruments at this third assessment of attitudes.

The "compromise experimental group-control group design" suggested by Kerlinger (15) was adopted for this study. Raw score data profiles were tabulated for the two groups and analyzed statistically through the use of the *t*-test for significance of differences between the two groups; the Pearson

product-moment coefficient of correlation was utilized to indicate the degree of relationship among attitude scores, basic values, and demographic variables (22). The 5 per cent probability level was accepted as the minimum for significance.

Three significant aspects of experiences at the institute must be mentioned briefly. (a) For most of the white Southern participants (over 90 per cent of the experimental sample), this was their first integrated school experience. As such, it was the first time since very early childhood that they had experienced a peer relationship with Negroes. (b) Further, through the inclusion of Negro consultants and discussion leaders at both large- and small-group sessions, the participants were placed in situations in which a Negro was the official, socially sanctioned, status leader. Stereotyped interactional patterns have long included the acceptability of white Southern educators bringing enlightenment to Negro students. The reversal of these roles, as a structured aspect of the institute experiences, was seen by the authors as a highly desirable and necessary factor. (c) Considerable overt and covert discussion and behavior, on the part of the institute directors and group leaders, was designed to encourage rational thought about changing social patterns. Even more importantly, perhaps, strong reinforcement was given to any evidence of positive attitudinal or behavioral modification. As borne out by the data, these primary factors—as well as many others of a more educational nature (readings, field trips, lectures, etc.)—induced the desired changes as measured by the instruments used.

D. RESULTS

The findings of the investigation indicate that the training institute was instrumental in reducing authoritarian and ethnocentric attitudes and induced more favorable attitudes toward Negroes and school desegregation. Table 3 presents data corresponding to Posttest I. Significant differences were found ($<.01$) between the experimental and control group mean scores on the D scale and subtest N of the E scale (attitudes toward Negroes). A substantial difference ($<.10$) resulted when comparison was made between the two groups on the E scale at Posttest I. The recorded mean difference on the F scale resulted in a t of .64 and, therefore, was not significant. The attitudes of both groups toward Jews (subtest J) were similar as were attitudes tapped by subtest O.

The expectations of the effectiveness of the institute were realized more fully at Posttest II (see Table 4). Differences between the experimental and control group mean scores on the F and E scales were significant at the .05

TABLE 3
COMPARISON OF MEANS, STANDARD DEVIATIONS, AND TESTS OF SIGNIFICANCE
BETWEEN EXPERIMENTAL AND CONTROL GROUPS ON POSTTEST I

Variable	Experimental (<i>N</i> = 46)		Control (<i>N</i> = 29)		Posttest I	
	Mean	<i>SD</i>	Mean	<i>SD</i>	<i>t</i>	<i>p</i>
Total F score	100.15	26.92	104.17	26.30	.64	NS
Total E score	58.67	20.58	63.79	24.47	.94	.10
Total D score	83.28	26.88	97.41	44.65	1.54	.01
Subtest J of E	14.78	6.51	14.79	6.13	.01	NS
Subtest N of E	16.70	7.43	22.34	11.90	2.29	.01
Subtest O of E	27.20	8.65	26.62	9.36	.27	NS

Note: Since the author hypothesized the direction in which differences would be manifested, a one-tailed *t*-test of significance was used in analyzing the F, E, and D scores and E subtests.

level and the difference between the two groups on the D scale was significant at the .01 level of confidence.

TABLE 4
COMPARISON OF MEANS, STANDARD DEVIATIONS, AND TESTS OF SIGNIFICANCE
BETWEEN EXPERIMENTAL AND CONTROL GROUPS ON POSTTEST II

Variable	Experimental (<i>N</i> = 45)		Control (<i>N</i> = 27)		Posttest II	
	Mean	<i>SD</i>	Mean	<i>SD</i>	<i>t</i>	<i>p</i>
Total F score	95.71	24.73	103.81	26.98	1.27	.05
Total E score	57.96	18.17	64.22	24.42	1.16	.05
Total D score	81.22	27.99	101.19	43.46	2.14	.01
Subtest J of E	14.58	5.07	14.33	5.60	.19	NS
Subtest N of E	17.53	7.17	21.26	11.92	1.47	.01
Subtest O of E	26.36	7.75	28.59	9.14	1.06	.05

Note: Since the author hypothesized the direction in which differences would be manifested, a one-tailed *t*-test of significance was used in analyzing the F, E, and D scores and E subtests.

Attitudes of both the control and experimental groups toward Jewish attitude objects (subtest J of the E scale) remained extremely constant throughout the course of the study. (No attempt was made, during the course of the institute, to deal with these attitudes.)

Group differences on subtest O were not significant on Posttest I ($t = .27$), but did prove to be significant at the .05 level at the second posttest ($t = 1.06$). Attitude responses on subtest O are similar to F scale items, and it should be noted that similar results were found for both scales; no significant differences between group mean scores at the first posttest, but significant dif-

ferences at the .05 level at Posttest II. The experimental group displayed more tolerant attitudes toward Negroes when compared to the control group, with a mean score difference between the groups on subtest N significant at the .01 level of confidence ($t = 1.47$).

When statistical comparisons were made between the experimental group's mean attitude scores (pretest to Posttest II), significant differences were found for the D scale and subtest O of the E scale at the .01 and .05 levels of confidence respectively. It is extremely important to note, however, that all but one reported F, E, and D mean score decreased at subsequent testings (Posttest I and Posttest II), indicating positive attitudinal change. That is, experimental subjects as a group became less authoritarian and less ethnocentric and exhibited increasingly favorable attitudes toward Negroes and school desegregation policies (see Table 5).

The same pattern did not result when attitudinal scores of the control group were compared (pretest to Posttests I and II). There were no significant differences between control group mean scores on the F, E, and D scales when nine separate statistical comparisons were made employing the one-tailed t -test, as displayed in Table 6. *Rather*, examination of these data indicated that in most instances mean scale scores of the control group increased, indicating increased authoritarian, ethnocentric, and segregationist attitudes.

Correlative data indicating relationships among authoritarian, ethnocentric, and segregationist attitudes and values assessed by the *Study of Values* will be reported in a subsequent article, as well as the relationship of demographic variables to attitudes herein assessed.

E. DISCUSSION

Control group responses revealed highly consistent attitudes at each of three testing periods. Variance among scores on the three scales never reached significance. The "normal" influence of the summer quarter and subsequent influence of the home community had no significant effect on attitude patterns of the control group even though slight increases in mean scores (less favorable attitudes) were reported. This negative change for the control group is in sharp contrast to the positive change noted for the experimental group. In most instances (although starting at a similar point), at the end of the summer the experimental group had more favorable attitudes toward Negroes and school desegregation and were less authoritarian and ethnocentric than the control group. The situational influence of the summer institute must be assumed to be the independent variable instrumental in reducing authoritarian, ethnocentric, and segregationist attitudes among institute participants.

TABLE 5
COMPARISON OF MEANS, STANDARD DEVIATIONS, AND TESTS OF SIGNIFICANCE OF THE EXPERIMENTAL GROUP
PRETEST TO POSTTEST I, POSTTEST I TO POSTTEST II; AND PRETEST TO POSTTEST II

Variable	Pretest (<i>N</i> = 46)		Posttest I (<i>N</i> = 46)		Posttest II (<i>N</i> = 45)		Pre to Post I		Post I to Post II		Pre to Post II	
	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
Total F score	97.74	22.69	100.15	26.92	95.71	24.73	-.46	N.S.	.82	N.S.	.41	N.S.
Total E score	60.65	19.41	58.67	20.58	57.96	18.17	.47	N.S.	.18	N.S.	.68	N.S.
Total D score	89.65	29.52	83.28	26.88	81.22	27.99	1.08	.05	.36	N.S.	1.40	.01
Subtest J of E	14.57	5.91	14.78	6.51	14.58	5.07	-.17	N.S.	.17	N.S.	-.01	N.S.
Subtest N of E	18.00	8.40	16.70	7.43	17.53	7.17	.79	N.S.	-.55	N.S.	.29	N.S.
Subtest O of E	28.11	8.72	27.20	8.65	26.36	7.75	.50	N.S.	.49	N.S.	1.01	.05

Note. A one-tailed *t*-test of significance was used in analyzing the F, E, and D scores. A negative *t* value indicates a negative change; i.e., a change not in the predicted direction.

TABLE 6
COMPARISON OF MEANS, STANDARD DEVIATIONS, AND TESTS OF SIGNIFICANCE OF THE CONTROL GROUP:
PRETEST TO POSTTEST I; POSTTEST I TO POSTTEST II; AND PRETEST TO POSTTEST II

Variable	Pretest (N = 29)		Posttest I (N = 29)		Posttest II (N = 27)		Pre to Post I		Post I to Post II		Pre to Post II	
	Mean	SD	Mean	SD	Mean	SD	t	p	t	p	t	p
Total F score	102.03	27.90	104.17	26.30	103.81	26.98	-.30	N.S.	.05	N.S.	-.24	N.S.
Total E score	62.66	23.66	63.79	24.47	64.22	24.42	-.18	N.S.	-.07	N.S.	-.25	N.S.
Total D score	98.00	40.14	97.41	44.65	101.19	43.46	.05	N.S.	-.32	N.S.	-.28	N.S.
Subtest J of E	15.00	5.94	14.79	6.13	14.33	5.60	.13	N.S.	.29	N.S.	.43	N.S.
Subtest N of E	19.41	11.11	22.34	11.90	21.26	11.92	-.97	10	.34	N.S.	-.60	N.S.
Subtest O of E	28.24	9.18	26.62	9.36	28.59	9.14	.67	N.S.	-.80	N.S.	-.14	N.S.

Note. A one-tailed *t*-test was used in analyzing the F, E, and D scores and subtests J, N, and O. A negative *t* value indicates a negative change, i.e., a change not in the predicted direction.

The trend of favorable attitudes toward school desegregation and Negroes among institute participants was congruent with other verbal and behaviorable manifestations of the experimental subjects, witnessed by the investigators. The overtness of the stressed need for a reevaluation of attitudes toward Negroes and school desegregation contributed to increasingly favorable attitudes in this case, whereas the general effects of the institute resulted in less change in authoritarian and ethnocentric attitudes and no change in attitudes toward Jews. Findings by Stotland, Katz, and Patchen (21) lend support to this observation. They reported that, when change in attitudes toward Negroes and desegregation was observed, there was still evidence of no consistent change in attitudes toward other minorities.

The measuring instruments (D, E, and F scales) were sensitive enough to detect varying degrees of attitude patterns. The stability of these patterns at three different testing periods for the control group indicates the research value each scale may provide. At the same time, the E and F scales continue to serve as an adequate measuring instrument for studying individual differences of an ethnocentric and authoritarian-equalitarian nature in teachers and school administrators.

The Desegregation scale (D scale) may be helpful to other researchers in gathering data relative to attitudes toward school desegregation, Negroes, and related attitude objects. The high positive correlations (ranging from .42 to .93) of D scale scores with other attitude scores assessed by the E and F scales provide initial data to substantiate its validity in assessing attitudes relative to the acceptance of Negroes and agreement with school desegregation policies. It is likewise felt that a positive relationship has been adequately demonstrated between segregationist attitudes and authoritarian and ethnocentric tendencies.

Changes in the experimental subjects, as assessed by the attitude scales, seem to be generally congruent with other verbal and behavioral manifestations witnessed during and following the training period. Overt and positive statements and various kinds of behaviors generally support the findings of this study: i.e., institute participants, as compared with the control group, did exhibit more favorable attitudes toward Negroes and school desegregation, and correspondingly became less authoritarian and ethnocentric.

The training institute has shown that modification of racial attitudes and increasingly favorable acceptance of school desegregation can be achieved in the private attitudes of many Southerners when respected sources conspicuously break the former unanimity against school desegregation and the Negro stereotype.

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THE LEARNING OF CONGRUENT AND NONCONGRUENT SOCIAL STRUCTURES*

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A. INTRODUCTION

One experimental approach to studying the structural properties of groups has presented a task requiring the learning of social structures. The task of learning a social structure requires the subjects to learn the interpersonal relations existing between a set of people using a type of paired-associates paradigm. The assumption is made that people's past experiences lead them to expect or to ascribe certain properties to social structures. For example, people seem to expect sociometric choices to be mutual (3). De Soto (1) demonstrated that people apparently attribute the mathematical properties of asymmetry, transitivity, and completeness to the relation "influences," and that learning is facilitated or hindered according to the extent to which the social structure they are learning is congruent with such an expected social schema. Similarly, subjects more readily learn the relation "likes" when the social structure exhibits the property of symmetry or mutual liking. Zajonc and Burnstein (6) have extended De Soto's technique to the learning of social structures that differ in balance (2). They found that if the issue was an important one, then an unbalanced structure was more difficult to learn than a balanced one.

Lambert and Lambert (4), in discussing De Soto's previously cited experiment, have likened the asymmetric, transitive, complete social structure to a military chain-of-command. This suggests that people in our culture who are familiar with the hierarchical social structure of the military should learn readily social structures that are congruent with the military social schema. It follows also that the use of military titles in ways that are not congruent with the usual hierarchical ordering of the military can lead to interference in the learning of social structures due to interfering expectancies based on the previously learned schema.

In the present experiment subjects were assigned the task of learning the existing relation or either "influences" or "likes" in a group of four people

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¹ Now at the University of Connecticut.

whose transitive structures had either the mathematical properties of asymmetry and completeness or symmetry and incomplete transitivity. To this point the experiment is identical with De Soto (1). However, three sets of names for the persons comprising the four-man group were employed. The three sets of names were first names as in De Soto's experiment, properly ordered military titles and last names, and improperly ordered military titles and last names. The experimental design was therefore a two (interpersonal relations) by two (abstract social structures) by three (names and titles) design. Figure 1 presents the social structures and names and titles that were employed.

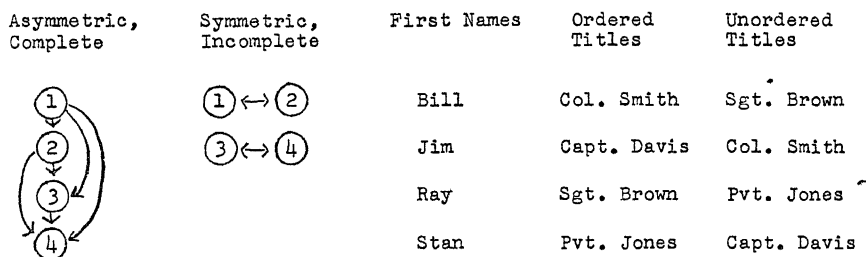


FIGURE 1
STRUCTURES AND NAMES AND TITLES USED IN THE EXPERIMENT

The present study hypothesized that De Soto's findings of an interaction between type of interpersonal relation to be learned and the mathematical properties of the social structure should again be found. The specific focus of the present study was to demonstrate that a social schema (military chain-of-command) that is congruent with past learning will facilitate the learning of social structures, while a social schema (improperly ordered military titles) that is not congruent with past expectations will interfere with the learning of social structures. It was further expected that the military titles (depending on their orderings) will be most congruent or noncongruent with the asymmetrical structure. Similarly, military titles seem most pertinent to the relation "influences."

B. METHOD

The Ss were 108 undergraduate males enrolled in an introductory psychology course. The Ss were randomly assigned, nine to a cell, to the 12 experimental conditions and were run individually.² The experimental method re-

² The author thanks Mr. Michael Herzbrun and Mr. James Garrett for their assistance in collecting the data.

sembled that of the traditional paired-associates learning experiments. Each *S* worked with a deck of 12 cards which presented two names on the front of the card, and he was required to learn whether a relation did or did not exist between the two persons. The relation was typed on the back of the card and, after the initial trial which presented the relation, provided knowledge of results. The instructions and procedure were identical to that of De Soto (1), with the obvious exception of the alterations in experimental design to study titles and last names. Two *Ss* were eliminated who could not learn the social structures within an hour's time limit, and one *S* was eliminated when inquiry revealed that he did not know correctly the hierarchy of military titles.

C. RESULTS

The difficulty of learning the various social structures was measured by the mean number of trials required by the *Ss* to learn them to a criterion of two successive correct trials. Table 1 presents the results of a two by two by three analysis of variance based upon trials to criterion for the various experimental conditions.

TABLE 1
ANALYSIS OF VARIANCE OF TRIALS TO CRITERION

Source	<i>df</i>	<i>MS</i>	<i>F</i>
Interpersonal relations (A)	1	66.90	
Names and titles (B)	2	826.67	16.90***
Social structure (C)	1	24.08	
A × B	2	28.23	
A × C	1	366.68	7.50**
B × C	2	192.03	3.93*
A × B × C	2	30.85	
Error	96	48.91	

* $p < .05$.

** $p < .01$.

*** $p < .001$.

The analysis reported in Table 1 reveals three significant *F* ratios. There is a significant interaction between the type of interpersonal relation to be learned and the type of social structure that verifies De Soto's earlier finding. An examination of the mean trials to criterion reveals that the asymmetrical, "influences" social structure ($M = 11.63$) was the easiest to learn, while the asymmetrical, "likes" social structure ($M = 16.89$) was the most difficult. Within the symmetrical structures, the relation "likes" ($M = 12.26$) was somewhat easier to learn than the relation "influences" ($M = 14.37$).

The second significant interaction is between type of social structure and names and titles. The means for the conditions were 15.50 (first name, asym-

metrical); 11.94 (first name, symmetrical); 6.83 (ordered, asymmetrical); 11.22 (ordered, symmetrical); 20.44 (unordered, asymmetrical); 16.78 (unordered, symmetrical). In the first name condition the influence of previously learned social schemata is not present. In comparison to the learning of the asymmetrical social structure in the first name condition, the learning of the asymmetrical social structure is significantly facilitated when properly ordered military titles are used and significantly hampered by using improperly ordered military titles.³ The learning of symmetrical social structures is not facilitated by the introduction of ordered military titles in comparison to the first name condition, but the learning of the symmetrical social structure is significantly hampered by introducing unordered military titles. The interaction reflects the greater difficulty of learning the asymmetrical structures than the symmetrical social structures in the first name and unordered military titles conditions and the comparatively greater ease in learning the asymmetrical social structures in the ordered military title condition. Within each of the names and titles conditions, however, the differences between the trials to criterion for the asymmetrical and symmetrical social structures do not reach the .05 level of significance.

The significant main effect for the names and titles condition reflects the facilitative effect on learning the social structures of the ordered military titles condition and the impedence on learning of the unordered military titles condition on learning the social structures in comparison to the first name condition.

While there was neither a significant triple interaction nor an interaction between type of interpersonal relation and the names and titles condition, it was very apparent that the easiest social structure to learn was the asymmetrical structure with the relation "influences" which used ordered military titles. The mean trials to criterion for this group was 2.33 which is significantly different from each of the other 11 cells. Six of the Ss anticipated the relations correctly on the first two trials and three Ss required one additional trial. This, in effect, is evidence of "no trial" learning: i.e., on the first trial six of the nine Ss were able to guess that Colonels influence Captains, Sergeants and Privates, while Captains influence Sergeants and Privates but not Colonels, etc.

D. DISCUSSION

The present experiment demonstrates that the learning of social structures is facilitated by providing cues that suggest the nature of the social structure. Military titles lead Ss to expect that the relations between men of different

³ All of the significant differences between cell means that are reported in this study used the "critical difference" technique of Lindquist (5, p. 93).

ranks will be in keeping with the military hierarchy. This is particularly true if the interpersonal relation to be learned is "influences," since this relation is central to the schema of chain-of-command. The relationship "likes" is also compatible with ordered military titles in the symmetrical social structure, since the officers select one another and the enlisted men select one another to be liked.

When the cues suggesting a military social structure are not congruent with the social structure that is presented for learning, then learning is impeded. While the group of *Ss* who learned the relationship "influences" in an asymmetrical structure with ordered military titles clearly stood out as the condition most conducive to learning, there was no comparable cell that excelled in difficulty to learn. The most difficult structure to learn was the "likes," asymmetrical, unordered titles condition ($M = 21.67$), but it was not significantly different from the "influences," asymmetrical, unordered titles condition ($M = 19.28$) or the "influences," symmetrical, unordered titles condition ($M = 18.33$). However, the difference between this most difficult cell and the "likes," symmetrical, unordered titles condition did reach the .05 level of significance. Since the triple interaction is not significant, it is unclear how much credence should be placed on the finding. But, it does seem reasonable due to the fact that both the relationship "likes" and the unordered military titles are not congruent with an asymmetrical social structure.

The findings of this study have reaffirmed that certain interpersonal relations seem more typically expected of certain social structures. It appears that the learning of social structures is a function of expectations or social schemas learned through prior social interaction. Further, it appears that when the cues provided by the formal organization of a group are in keeping with the informal or existing structure of the groups as reflected in the interaction between members, then the learning of the social structure and the process of adjusting one's role expectations and role behaviors should be relatively easy. However, if the formal organization suggests a set of formal status relationship, but the informal statuses are, in fact, differently defined in action; then the adjustment of the group will be impeded. The military group can provide a case in point. The hierarchy of military ranks that are readily identifiable provides a social structure that is relatively independent of the personal identity or informal status of the individual. The formal status of rank so structures the group that the position of leader and his ability to command or "influence" is instantaneously ordered. The task of learning the "influence" social structure does not ordinarily arise. This facilitates the performance of groups whose leadership position is highly mobile as in war where death can quickly require reorganization of the group. In the instances where the formal

military rank is not in keeping with the individual's ability to lead effectively, then the process of learning the "influence" social structure will be more difficult. Military effectiveness will be greatly hampered to the extent that the informal leadership ability of soldiers in responsible positions is not congruent with the formal hierarchy of ranks.

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AUTHOR INDEX

Albeft, Robert S.	241	Kinnick, Bernard C	271
Anderson, Lynn R.	227	Knapper, Chris	-191
Armilla, Jose	219	Kunce, Joseph	37
Bass, Alan R.	227	Madaus, George F.	13
Bloomer, Richard H.	75	Mason, Evelyn P.	145
Bochner, Stephen	157	Meade, Robert D.	47
Bohrenstedt, George W.	137	Melikian, Levon H.	169
Borgatta, Edgar F.	137	Morsbach, Gisela	53
Burton, Jean L.	253	Morsbach, Helmut .	53
Capel, W. C.	125	Mosher, Donald L.	285
Clement, Elaine	37	Mundy-Castle, A. C.	161
Cohen, Stanley L	75	Nidorf, Louis J	211
Crockett, Walter H.	211	Noll, Gary A.	261
David, Kenneth H.	157	Plattor, Stanton D.	271
Dohme, John A.	205	Ramirez, Manuel, III	3
Dole, Arthur A.	111	Rankin, L. S.	37
Evans, Robert R.	137	Rosnow, Ralph L	97
Fischer, Edward H.	75	Schlesinger, Lawrence E	75
Goldstein, J. H.	97	Schultz, Duane P.	71
Gorlow, Leon	261	Shim, Neil	111
Guerney, Bernard, Jr.	253	Steiner, Ivan D.	199
Guggenheim, Fred	23	Walberg, Herbert J.	89
Harari, Herbert	177	Warr, Peter B.	191
Henderson, Norman B.	61	Whittaker, James O.	47
Hoem, Anton	23	Willis, Joe E.	205
Ikard, Frederick F.	205	Zurcher, Louis A.	205
Johnson, Homer H.	199		

TABLE OF CONTENTS

Identification with Mexican family values and authoritarianism in Mexican-Americans	3
By MANUEL RAMIREZ III	
A cross-cultural comparison of the factor structure of selected tests of divergent thinking	13
By GEORGE F. MADDAUS	
Cross-cultural and intracultural attitudes of Lapp and Norwegian children	23
By FRED GUGGENHEIM AND ANTON HOEM	
Maze performance and personal, social, and economic adjustment of Alaskan natives	37
By JOSEPH KUNCE, L. S. RANKIN, AND ELAINE CLEMENT	
Sex and age as variables in persuasibility	47
By JAMES O. WHITTAKER AND ROBERT D. MEADE	
A cross-cultural investigation of occupational stereotypes in three South African groups	53
By HELMUT MORSBACH AND GISELA MORSBACH	
Cross-cultural action research: Some limitations, advantages, and problems	61
By NORMAN B. HENDERSON	
Birth order of volunteers for sensory restriction research	71
By DUANE P. SCHULTZ	
Some effects of relevant stories portraying danger on retention of information associated with the stories	75
By EDWARD H. FISCHER, STANLEY L. COHEN, LAWRENCE E. SCHLESINGER, AND RICHARD H. BLOOMER	
Religious differences in cognitive associations and self-concept in prospective teachers	89
By HERBERT J. WALBERG	
Familiarity, salience, and the order of presentation of communications	97
By RALPH L. ROSNOW AND J. H. GOLDSTEIN	
Components of social distance among college students and their parents in Hawaii	111
By NEIL SHIM AND ARTHUR A. DOLE	
Continuities and discontinuities in attitudes of the same persons measured through time	125
By W. C. CAPEL	
Smoking and MMPI scores among entering freshmen	137
By ROBERT R. EVANS, EDGAR F. BORGATTA, AND GEORGE W. BOHRENSTEDT	
BOOKS RECENTLY RECEIVED	141
Comparison of personality characteristics of junior high students from American Indian, Mexican, and Caucasian ethnic backgrounds	145
By EVELYN P. MASON	

Immediate vs. delayed reward among Arnhem-Land aborigines	157
BY KENNETH H. DAVID AND STEPHEN BOCHNER	
An experimental study of prediction among Ghanaian children	161
BY A. C. MUNDY-CASTLE	
Social change and sexual behavior of Arab university students	169
BY LEVON H. MELIKIAN	
An experimental evaluation of Heider's Balance Theory with respect to situational and predispositional variables	177
BY HERBERT HARARI	
Negative responses and serial position effects on the Adjective Check List	191
BY PETER B. WARR AND CHRIS KNAPPER	
Some effects of discrepancy level on relationships between authoritarianism and conformity	199
BY HOMER H. JOHNSON AND IVAN D. STEINER	
Dogmatism, future orientation, and perception of time	205
BY LOUIS A. ZURCHER, JR., JOE E. WILLIS, FREDERICK F. IKARD, AND JOHN A. DOHME	
Individual differences in responses to the Semantic Differential	211
BY WALTER H. CROCKETT AND LOUIS J. NIDORF	
Predicting self-assessed social leadership in a new culture with the MMPI	219
BY JOSE ARMILLA	
Some effects of victory or defeat upon perception of political candidates	227
BY LYNN R. ANDERSON AND ALAN R. BASS	
The influence of patterns of conformity and general reasoning ability on subjects' responses to an inconclusive message: A preliminary study	241
BY ROBERT S. ALBERT	
Comparison of typical peer, self, and ideal percepts related to college achievement	253
BY BERNARD GUERNEY, JR., AND JEAN L. BURTON	
A study of empirically derived values	261
BY LEON GORLOW AND GARY A. NOLL	
Attitudinal change toward Negroes and school desegregation among participants in a summer training institute	271
BY BERNARD C. KINNICK AND STANTON D. PLATTOR	
The learning of congruent and noncongruent social structures	285
BY DONALD L. MOSHER	
BOOKS RECENTLY RECEIVED	291

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C. TOTAL PAID CIRCULATION		1991	2070
D. FREE DISTRIBUTION (including samples) BY MAIL, CARRIER OR OTHER MEANS		10	10
E. TOTAL DISTRIBUTION (Sum of C and D)		2001	2080
F. OFFICE USE, LEFT-OVER, UNACCOUNTED, SPOILED AFTER PRINTING		349	395
G. TOTAL (Sum of E & F—should equal net press run shown in A)		2350	2475
I certify that the statements made by me above are correct and complete.		(Signature of editor, publisher, business manager or owner)	
		Powell Murchison, Business Manager	